

# THE MILLING WORLD

AND

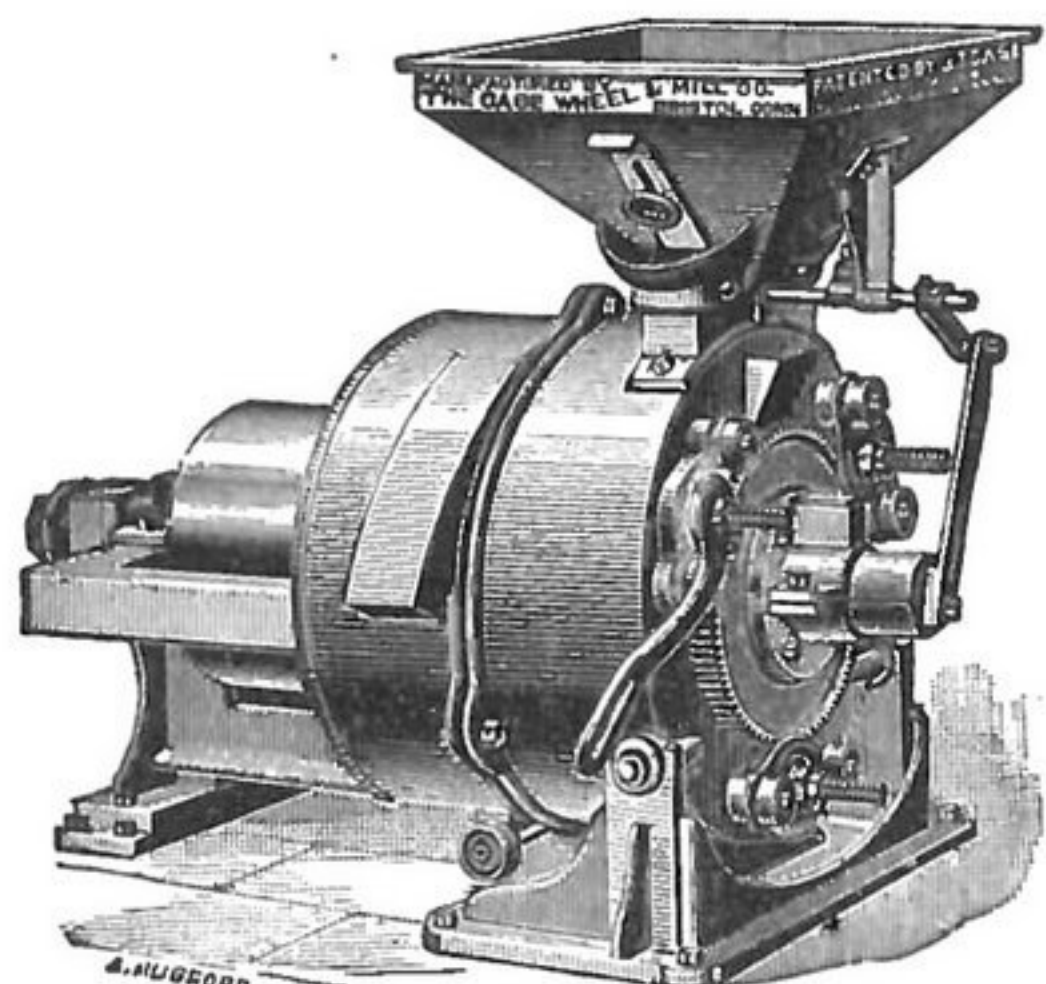
CHRONICLE OF THE GRAIN AND FLOUR TRADE

PUBLISHED EVERY MONDAY MORNING.

VOL. XXII. No. 6.

BUFFALO, N. Y., APRIL 7, 1890.

\$1.50 PER YEAR.



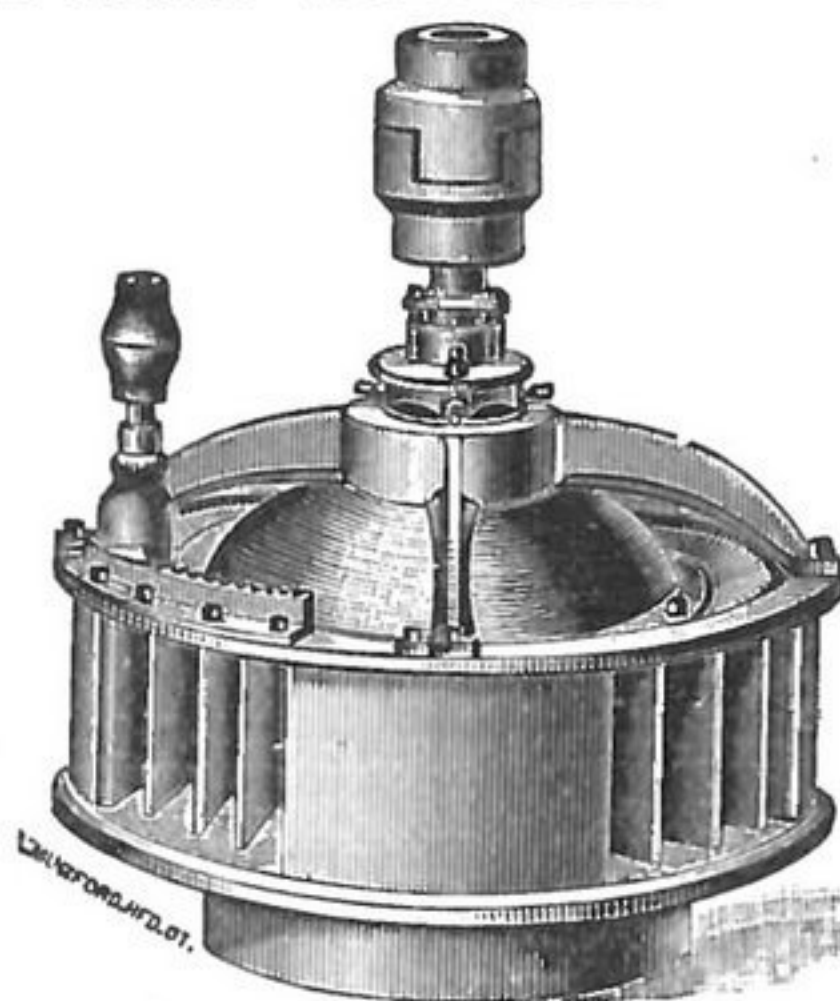
## VICTORY OVER ALL OTHERS. SINGLE & DOUBLE VERTICAL GRINDING MILLS. (J. T. CASE'S PATENT.)

FACTS ARE MIGHTIER THAN ASSERTIONS. READ WHAT THEY SAY:

"Our 20-inch mill made by the Case Wheel & Mill Co. is in every respect satisfactory, easy to handle, and best results obtained of any mill in the country, with same quantity coal and power."—A. S. RUSSELL & Co., Meriden, Conn.  
"Superior to any mill in use."—GEO. WESTON, Bristol, Conn.  
"The best satisfaction in quantity and quality."—CHILD'S ELEVATOR, Manchester, Ct.  
"We take pleasure in recommending it."—GARLAND, LINCOLN & Co., Worcester, Mass.

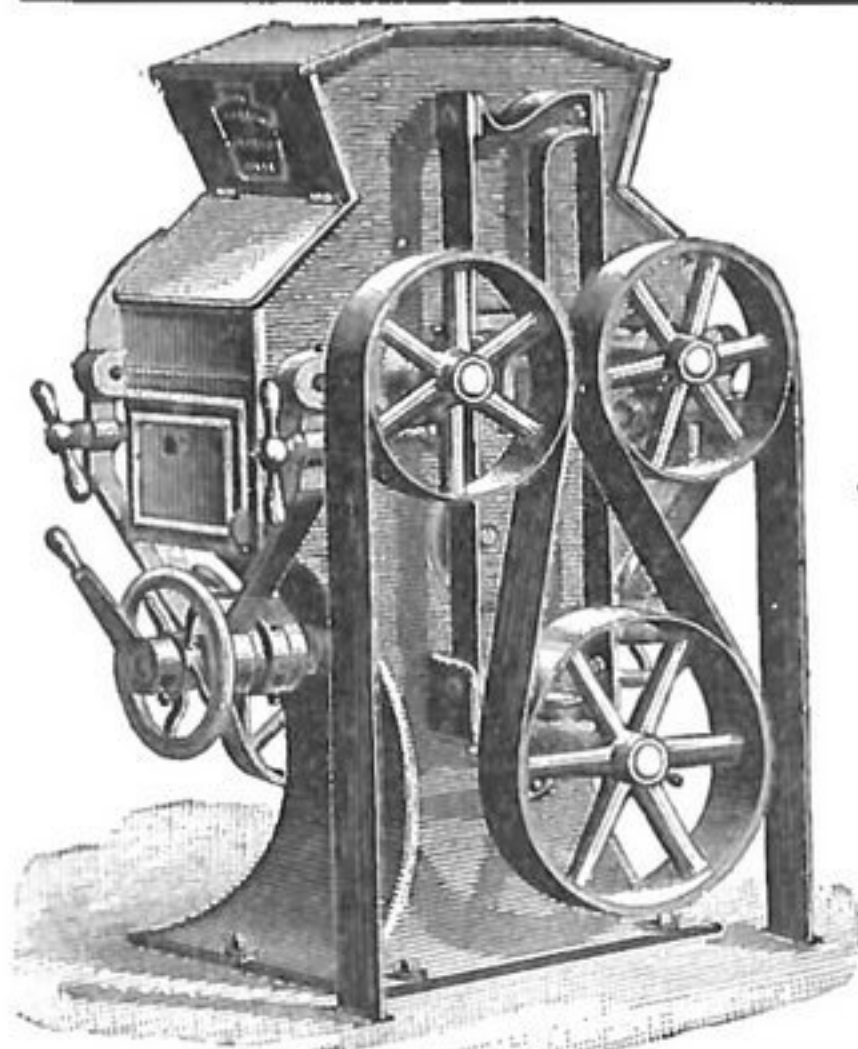
SEND FOR CATALOGUE—ILLUSTRATED AND DESCRIPTIVE.

## The Improved National Turbine Water Wheel



The Best for Economy; The Best for Durability; The Best for Power. ONE THOUSAND FIVE HUNDRED NATIONAL WATER WHEELS IN USE Prove that our Assertions are Supported by the Leading Manufacturers in the Country. Send for illustrated catalogue and prices to the manufacturers.

**The Case Wheel & Mill Co., Bristol, Conn.**



THE "KEYSTONE."

THE J. B. ALLFREE COMPANY, INDIANAPOLIS, IND.

NEW SHARON, IOWA, Feb. 10, 1890.

GENTLEMEN: We have had your mill in operation since November, 1889. It is an 80-barrel mill and put up in splendid style and finish. The *workmanship is perfect*, and in every respect, and all *our machinery runs with the greatest of ease*. Our engine is an "Allfree Automatic," and *it is a "daisy."* It *plays* all day long and takes *but little fuel*. *We would sooner have it than a Corliss*, and think it is *quite as economical*. Our entire mill outfit is first-class, and is made by *The J. B. Allfree Company, of Indianapolis, Ind.* The *shaker scalper* is a *success*, and *does better work than a reel scalper*, and runs easily with a 3-inch belt.

We wish all intending to build mills could pay us a visit, so that we could show them all the good points of our mill—for *to see is to be convinced of its superiority*. Our mill does good work, and we can say that we have had *no choke-up* and *no belt to change since we started*. We can *fully recommend the J. B. Allfree machinery* in every respect to millers wishing to build or remodel their mills.

Yours truly,

NEW SHARON MILL CO., R. D. HIGH, Manager.

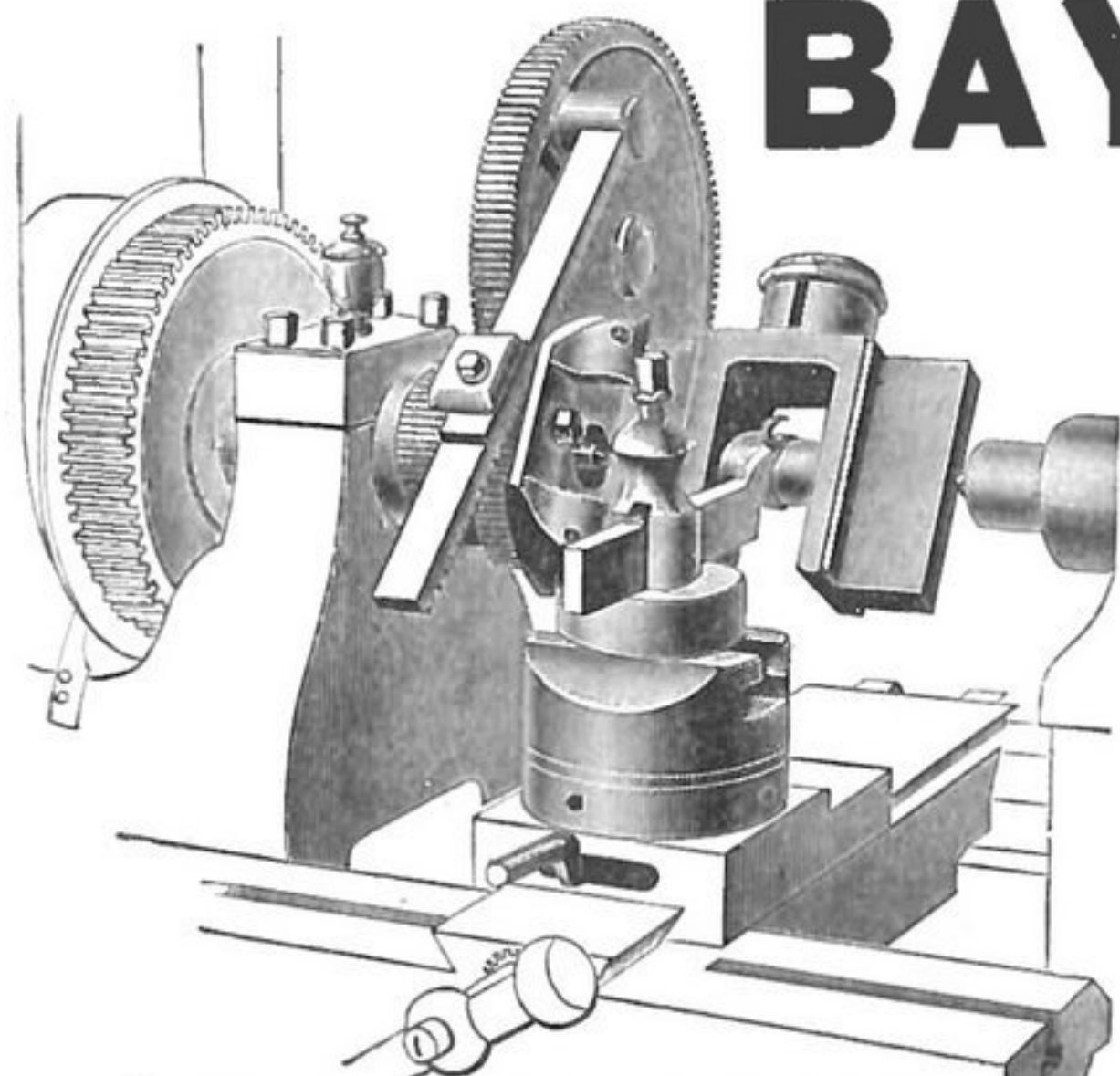
**ADDRESS THE J. B. ALLFREE CO., 76 to 86 Shelby Street, INDIANAPOLIS, IND.**

## BAY STATE IRON WORKS

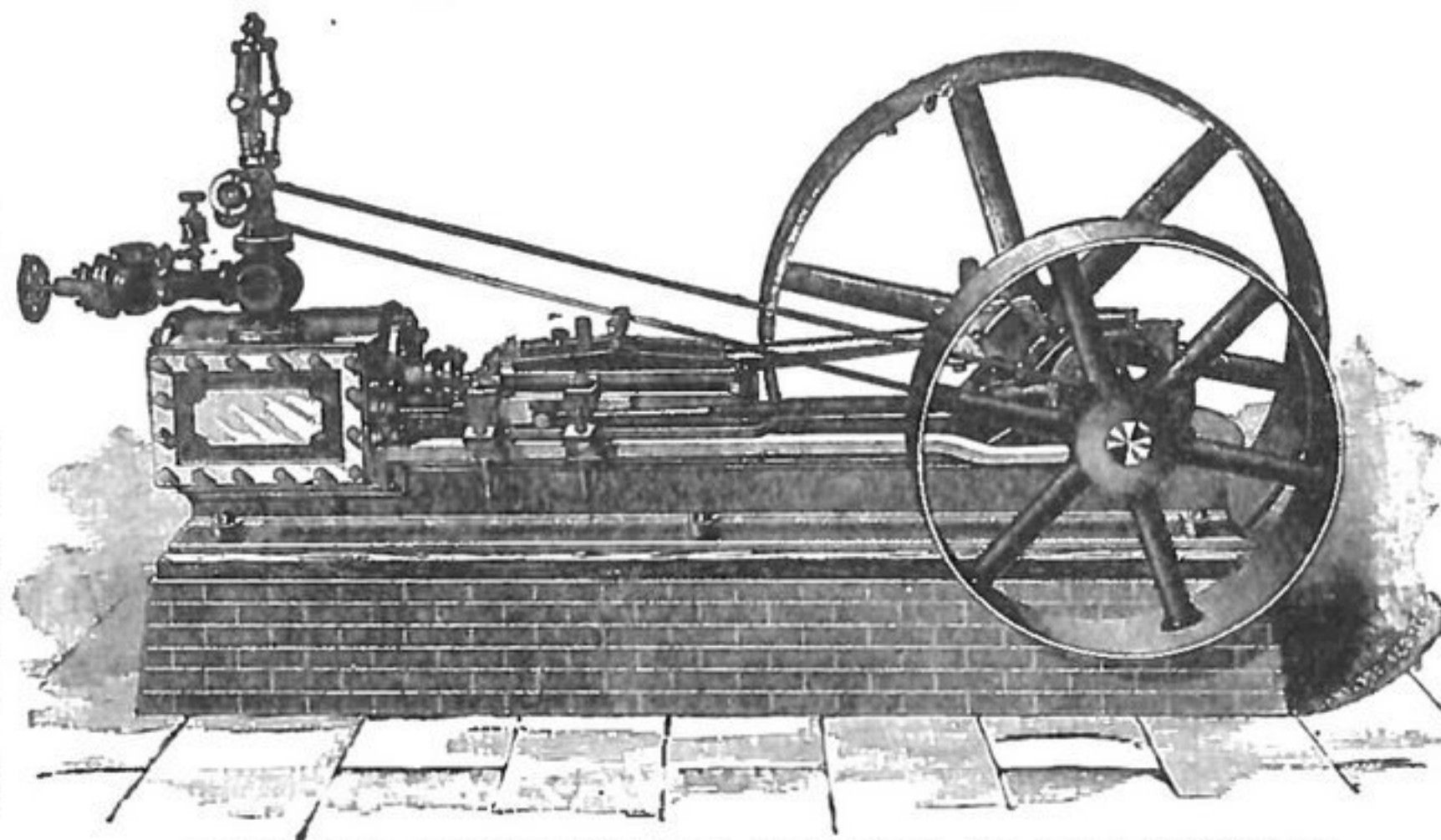
Manufacturers of—

**Engines, Boilers,  
—AND—  
HOISTING MACHINES.**

Also the Patent Cross-Head Machine and Acme Cube Pipe Tongs. We make either Center or Side Crank Engines, on same bed. Make engines from 5 to 250 Horse-Power. Have over 3,500 Engines and Boilers and over 1,000 Hoisting Machines in use, and all giving good satisfaction. Send for Catalogues and Prices.



PATENT CROSS-HEAD MACHINE.



IMPROVED DETACHABLE CENTER-CRANK ENGINE.

**Noble & Hall, Box 462, Erie, Pa.**



# OFFICE OF CASE MANUFACTURING COMP'Y COLUMBUS, OHIO.

## The Case Roller Mills. Over 14,000 Pairs in Use.

PLEASE READ OUR DESCRIPTION OF THEM, EVERY STATEMENT OF WHICH IS ABSOLUTELY TRUE.

PLEASE READ WHAT MILL OWNERS SAY ABOUT THEM.



The accompanying cut is a correct illustration of our latest improved Four Roller Mill. For fine work, great durability, simplicity, and general excellence, they stand "head and shoulders" above all others.

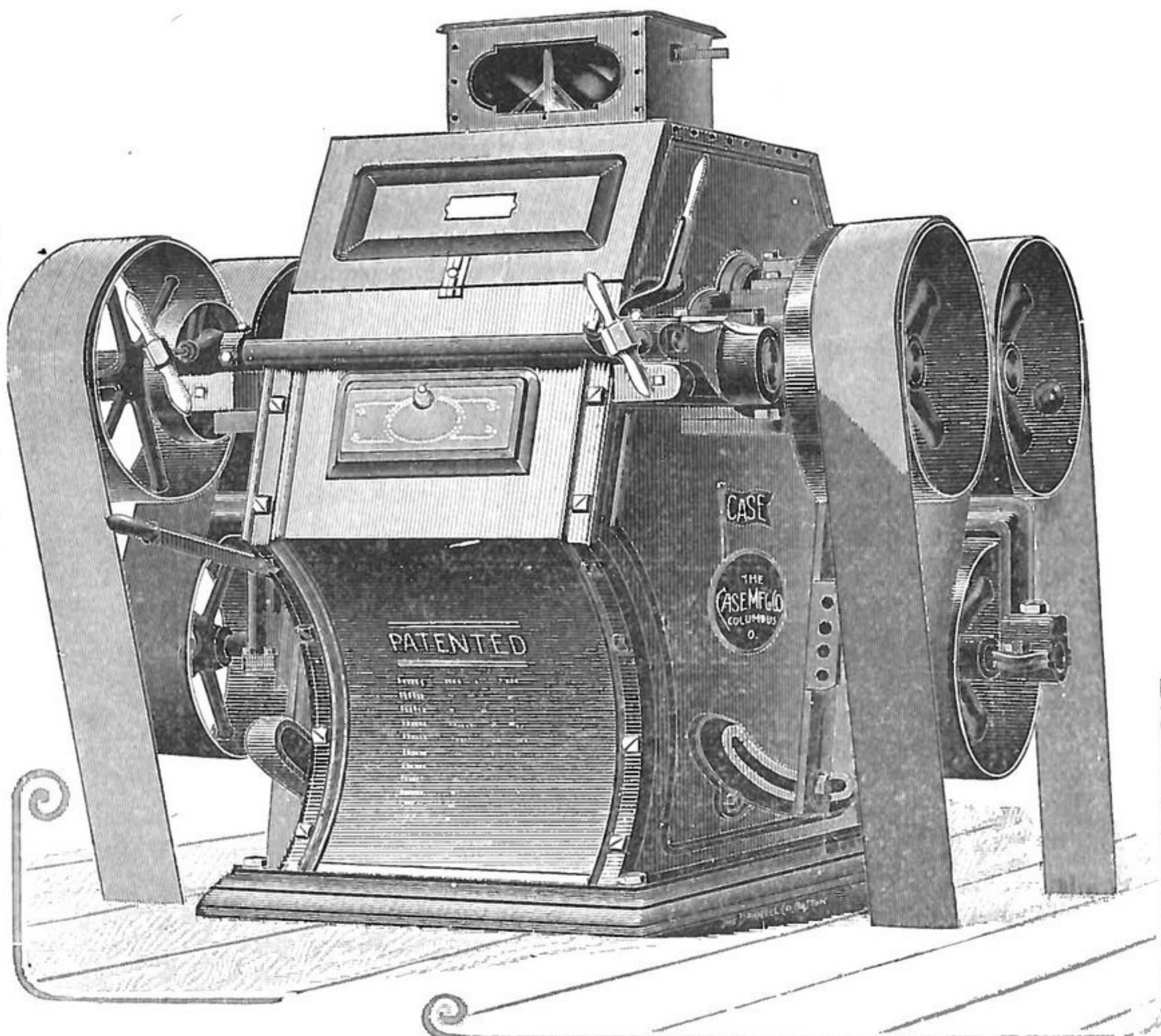
The frame is of iron with a heavy iron base.

The wood-work in top is of select cherry and black walnut, carefully shellacked and varnished.

The handles of adjusting screws and levers are finely nickel plated.

The joints are tight and dustless.

The adjustments easy, simple and perfect.



The roll bearings are wide and finely babbitted.

The belt drive is positive—no little short belts to slip.

The door for examining stock is a great convenience.

The arrangement for leveling rolls, simple and accurate.

The rolls can be thrown apart their entire length by one movement of the lever, and brought back again to original position, requiring no re-setting or experimenting.

Each machine is provided with our AUTOMATIC VIBRATING FEED, which requires no attention, and never fails to spread the feed the entire length of the rolls.



## Please Read These Testimonials.

LITCHFIELD MILLING CO., MANUFACTURERS OF FLOUR. }  
LITCHFIELD, ILL., Sept. 14, 1889.

Case Manufacturing Co., Columbus, Ohio.

GENTLEMEN: We are in receipt of your favor of the 11th inst., and in reply would say we have twenty CASE AUTOMATIC FEEDS on our Dawson and Allis Rolls, and we are greatly pleased with them. We have tested the Feeds thoroughly on different materials, and find they work as well on bran and germ and other soft materials, as they do on middlings. We have derived great benefit from the use of them, and can cheerfully recommend them to the milling fraternity.

Yours truly,

J. C. EDWARDS, General Manager.

OFFICE OF A. J. MILLER, PROPRIETOR WHITE ROSE MILLS. }  
DEALER IN FLOUR, GRAIN AND MILL FEED. }  
METAMORA, IND., Nov. 19, 1889.

Case Manufacturing Co., Columbus, Ohio.

GENTLEMEN: Your Feed arrived O. K., and placed it in working order in a very short time. You have furnished me a daisy Feed. After regulating your Feed, it needs no more attention. It pays for itself in one week over the "Roller Feed" in cleaning up the

stock, and also insuring the superiority at same time. I forward you the amount of bill.

Yours truly, A. J. MILLER.

TREZEVANT, TENN., Feb. 27, 1889.

The Case Manufacturing Co.

GENTLEMEN: We have five double stands of Rolls with Roller Feeds on all of them. A short time ago one of your agents induced us to try one of your Automatic Shaker Feeds. We find that it works much better than the Roll Feed, distributing the material the whole length of the Roll. We heartily recommend your feeds to any one wishing to put in new machinery.

Respectfully yours, FUQUA, HARRIS & CO.

W. C. MANSEFIELD & CO., MERCHANT MILLERS. }  
CLEVELAND, TENN., Aug. 29, 1889.

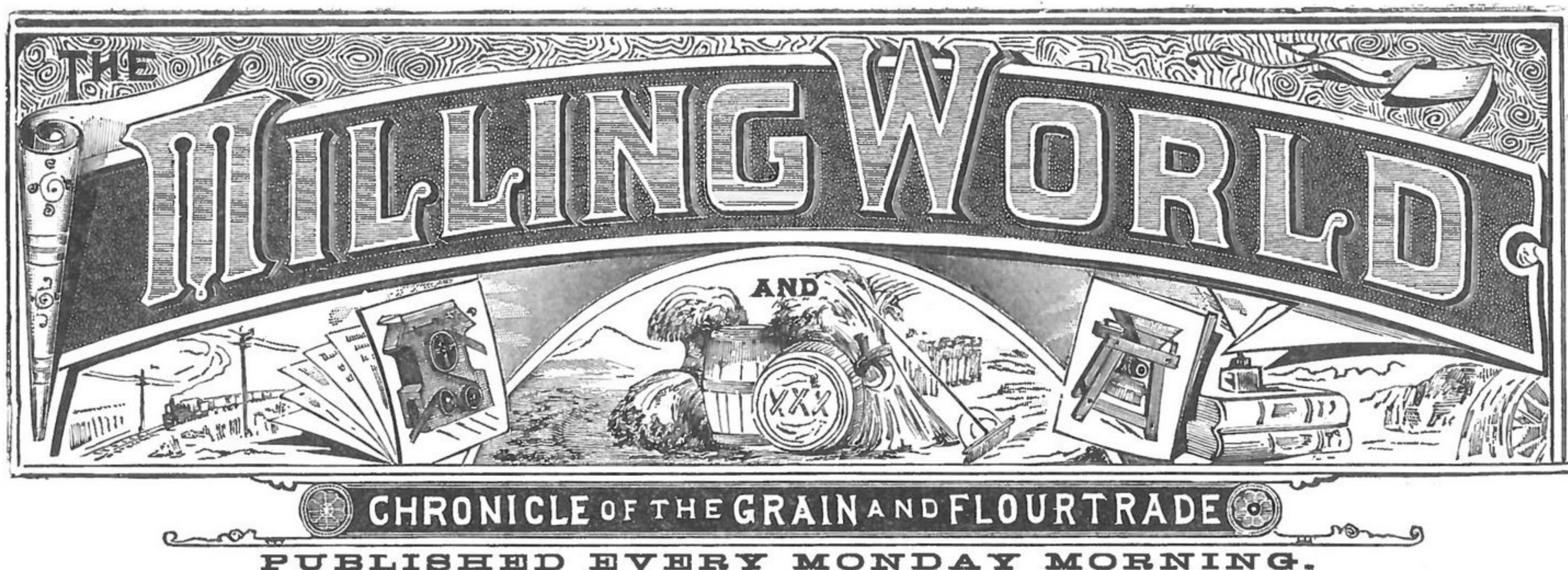
Case Mfg. Co., Columbus, O.

GENTLEMEN: If we were to build a hundred mills, we would not permit any other than the "CASE ROLL" to enter them. They are the best roll on earth.

Yours truly,

W. C. MANSEFIELD & CO.





VOL. XXII. No. 6.

BUFFALO, N. Y., APRIL 7, 1890.

\$1.50 PER YEAR.

AMONG the new advertisements in this issue is that of the Cincinnati Corrugating Company, of Piqua, Ohio. Every owner of buildings devoted to manufacture will be interested in the roofing made by this firm. Address them for information.

THE Buffalo prize of \$100,000 for the best method of utilizing the current of Niagara river is still unclaimed. What has become of the inventors? One of the thousands of perpetual-motion cranks in the country ought to tackle the problem of "harnessing the Niagara."

THE patent litigants, who claim the whole earth and all the mechanical powers therein, will receive no sympathy when they are finally overtaken by disaster. Their arrogant assumption and impudent assertion, that their claims cover all that is valuable in a given line, will call down upon them united opposition, and the courts may generally be relied upon to protect the public against the rapacity of greedy litigants. Visions of royalty are very attractive to certain minds, but the wise manufacturer knows that a business bird in the hand is worth millions of royalty birds in the court bush.

In a notice of the new edition of "Cawker's American Flour Mill and Elevator Directory," which appeared in these columns two weeks ago, it was announced that the volume contained a total of 17,145 addresses of millers and others connected with and interested in the milling trade. That announcement was erroneous. The number 17,145 applies only to the millers of the United States and Canada. The total number of mill-wrights, elevator owners, flour and grain brokers, bakers and others, whose addresses are contained in the directory, is several thousand, swelling the total of addresses in the book to over 20,000. The error was an important one, and our readers will do well to note the correction.

CERTAIN grain-gamblers are opposed to the reports on crop conditions and prospects made by the Department of Agriculture. They assert that the publication of those reports gives foreigners the power to manipulate prices, to the damage of the farming interests of the United States. It will be news to the farmers and the millers of the United States to learn that their interests are a subject of uncommon anxiety to the pure-souled, the moral and the philanthropic grain-gamblers. It is to be feared that the millers and farmers will see only crocodilian tears dropping from the optics of the gamblers as they read the Dodge statistical reports. If the American grain-growers and flour-makers are not wrecked on the Scylla of American gamblers, they need not fear the Charybdis of European gamblers. Up to date the real injury has been inflicted on American producers by the gamblers.

THE millers of Canada, in their convention in Toronto, on the first and second of April, clearly stated their grievance against the Canadian railroads, and they appear to be working unitedly and wisely to have the railroads brought to

terms and forced to give Canadians at least an equal chance with Americans over their lines. Evidently the central and western Canadian flour-makers have decided that they will no longer be sacrificed in the interest of political parties or to the needs of citizens in the provinces that import flour. They uphold the 75-cent duty on imported flour recently imposed by the Dominion government. They ask for grinding-in-bond privileges, and in various other ways they show that they are alive to the necessities of the situation. The meeting was well attended, and the workers are aroused. Canadian milling has been under a cloud for some time, but that cloud now promises to roll by soon and leave the Dominion flour-makers a clear sky.

THOSE fanatics who believe in "crushing" the railroads, by state and national restrictive legislation, ought to feel proud of their success up to date. According to a recent statement made by a prominent railroad official, the president of an important line, the Chicago and Alton, the actual value of railroad investments in the United States has been reduced during the last five years by nearly \$1,000,000,000, and is now being reduced by the course of the state and federal governments at the rate of nearly \$1,000,000 a day. Even the demagogues, who believe in "confiscation without compensation," ought to be satisfied with this ruinous warfare on the railroads. The fool Interstate Commerce law is at the bottom of this depreciation, and, as the damage done to railroad investments has not resulted in corresponding benefits to the general public, the public begins to question the propriety of attempting to enforce that law. The popular sentiment against it is increasing daily, and foremost among the men who advocate its repeal are the farmers of the West, who only a short time ago were foremost in creating that monstrous, unreasonable, inequitable and destructive law.

THE Consolidated Roller Mill Company are not paying any milling journals to publish the Blodgett decision, but they are making the announcement that they intend to prosecute their roller-mill patent cases to the extreme. In another column is reprinted their pronouncement to that effect. Particular attention is called to their dismal wail, in which they make a covert attack on the court concerned, on their opponents in person, and on all roller-mills not concerned in their particular patents. A more foolish document might be imagined, but the public will be obliged to wait for it until the Consolidated Roller Mill Company feel like issuing another. Of course they do not "intend to try our (their) cases in the newspapers"! O no! Certainly not! Perish the thought! And yet, with what eagerness they have always used the columns of the newspapers, in every possible way, to publish every thing that favored or seemed to favor their case! How liberally they paid for such publication in certain journals! How careful they were to have it all set forth! Bravery is a good thing, but in litigation discretion ranks above bravery as far as gold ranks above lead or the finest flour ranks above "yaller-dog." If the Consolidated people are not satisfied, their proper course is to go on and fight.



# The DAWSON ROLL WORKS CO. FOUNDERS & MACHINISTS,

—MANUFACTURERS OF THE—

## Dawson Roller Mills

—AND FURNISHERS OF—

### CHILLED IRON ROLLS

WITH DAWSON PATENT CORRUGATION.

ALL STYLES OF FLOUR MILL ROLLS RE-GROUND AND  
RE-CORRUGATED WITH ANY FORM OF CORRUGATION.

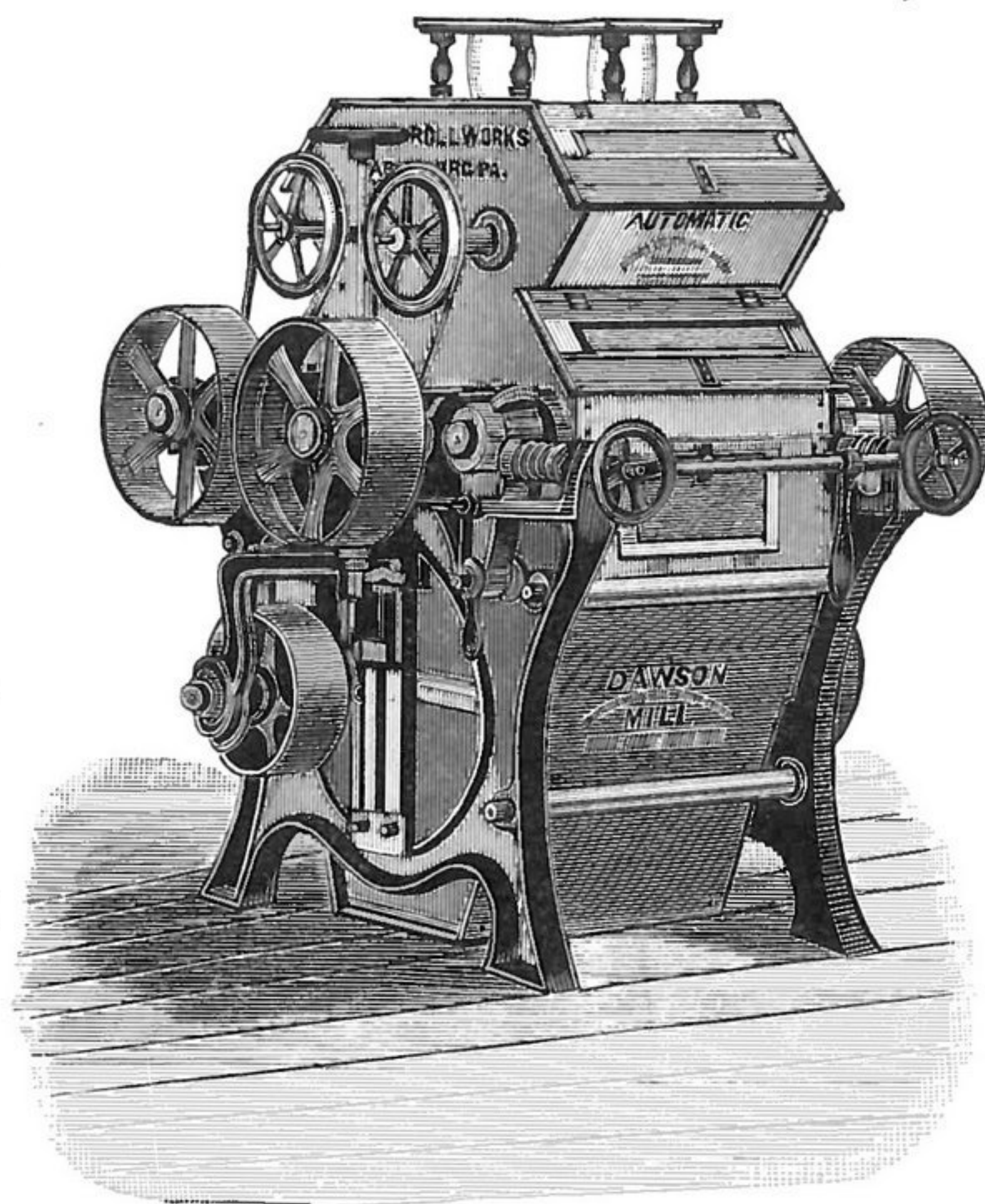
We have had large and extended experience in grinding and corrugating chilled rolls for milling, and have one of the largest and most improved plants in the country for this work, which enables us to meet the most exacting requirements of the trade promptly.

ORDERS AND CORRESPONDENCE SOLICITED.

## DAWSON ROLL WORKS CO.

South and Short Streets,

HARRISBURG, PA.



## The Cowles "Reliable" Sectional Wood Pulley

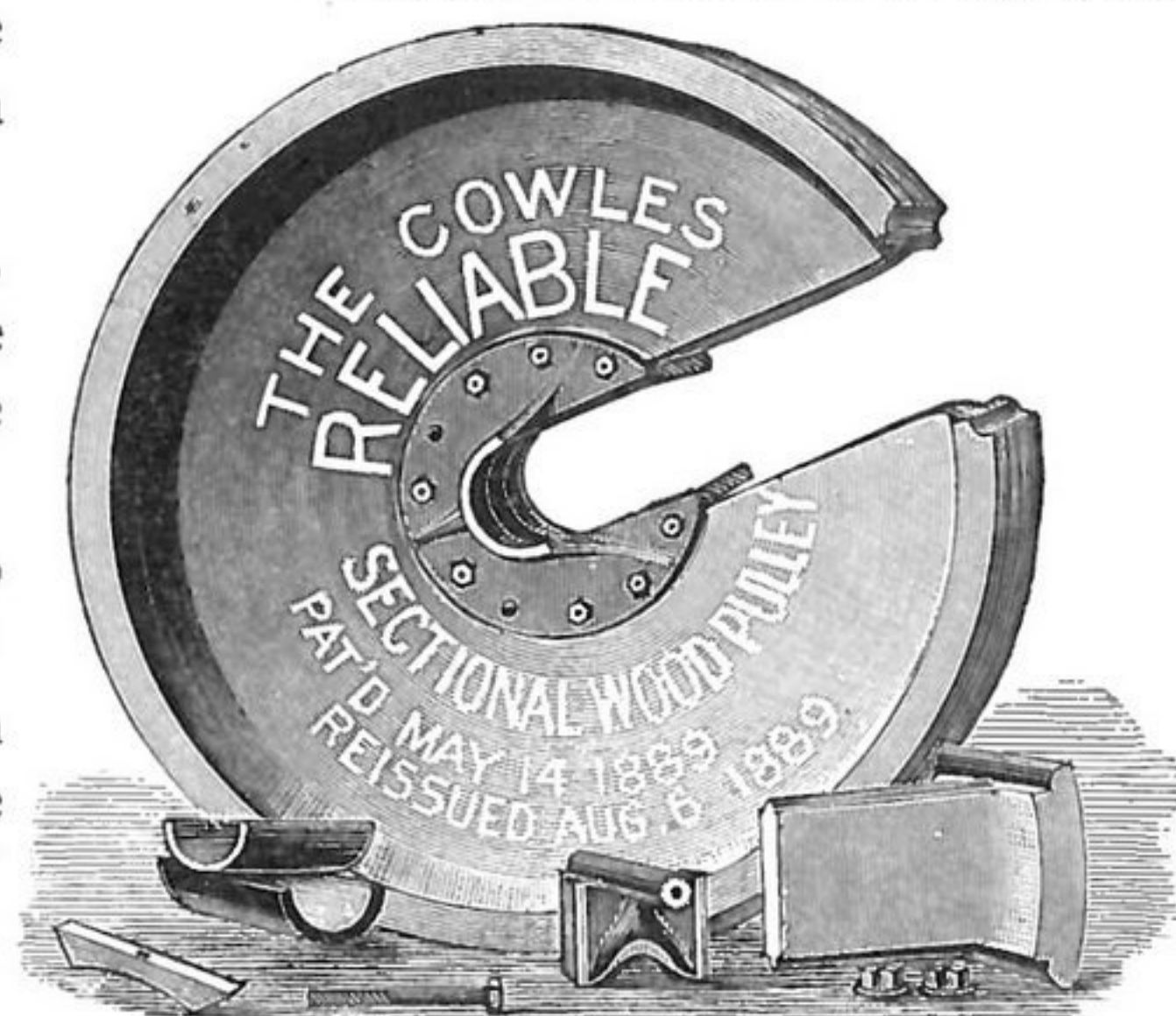
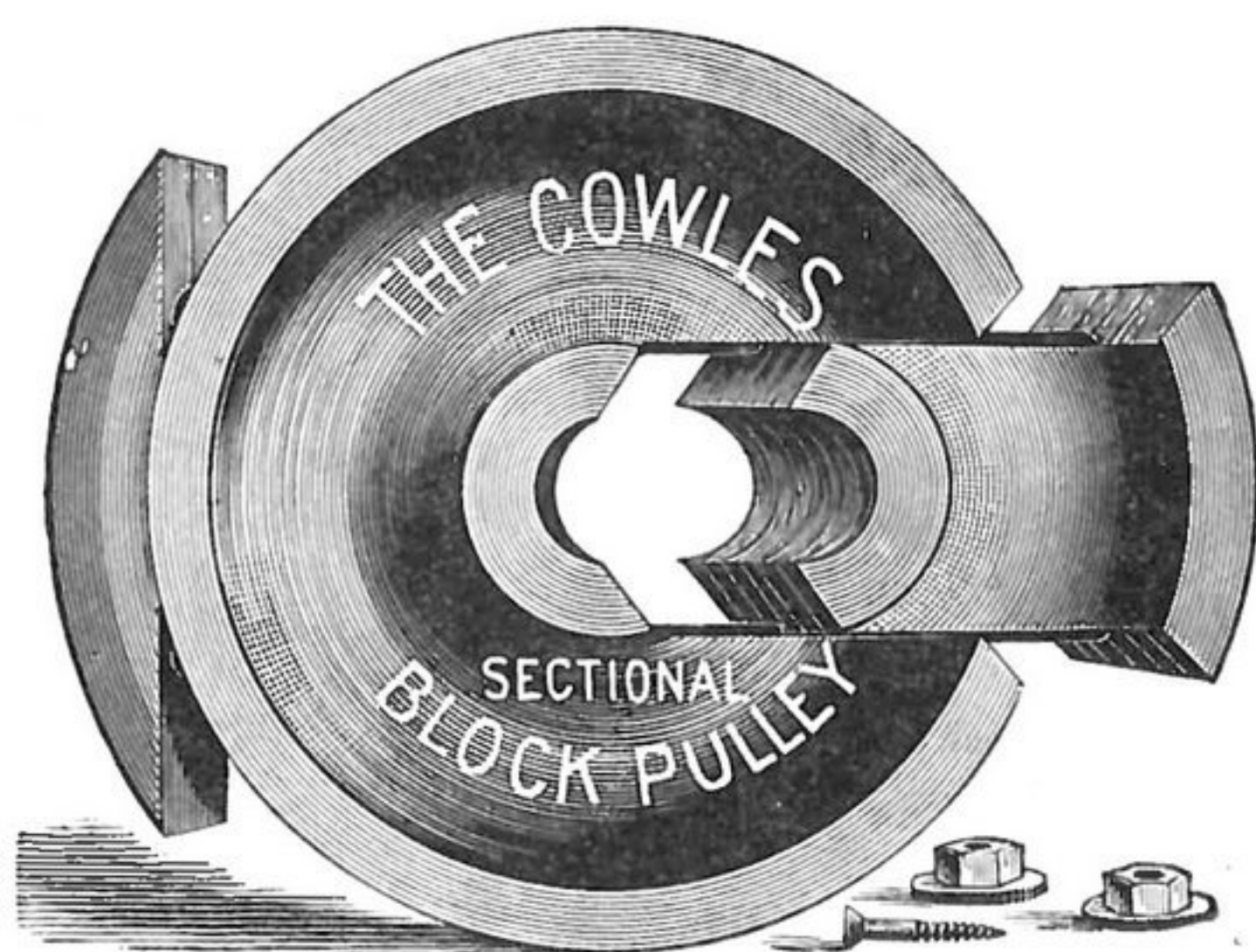


Web made of several layers glued together with grain crossing, and faced up on both sides. Iron flanges securely bolted to web. Rim put on after web has been trued up. Web and rim turned on inside and face, making perfect running pulley. Rim supported entire circumference. Positive self-gripping device for securing pulley to shafting, which is self-centering, and can not slip with wear.

A wooden rim pulley transmits from 30 to 50 per cent. more power with same belt than an iron one.

Two-thirds lighter than iron, bearings will wear longer and the expense for lubricant will be less.

Having solid web, there is no air resistance. The "Reliable" can be placed on shaft or position changed in one-fourth the time required with any other pulley.



EDWARD GERMAIN, SOLE MANUFACTURER SAGINAW, MICH., U.S.A.





PUBLISHED EVERY MONDAY. OFFICES: { Corner Pearl and Seneca Streets,  
Over Bank of Attica.  
McFAUL & NOLAN, - - - PROPRIETORS.  
THOMAS MC FAUL. JAMES NOLAN.

#### SUBSCRIPTION.

In the United States and Canada, postage prepaid, \$1.50 Per Year, in advance; remit by Postal Order, Registered Letter, or New York Exchange. Currency in un-registered letter at sender's risk.

To all Foreign Countries embraced in the General Postal Union, \$2.25 Per Year, in advance.

Subscribers can have the mailing address of their paper changed as often as they desire. Send both old and new addresses. Those who fail to receive their papers promptly will please notify at once.

#### ADVERTISING.

Rates for ordinary advertising made known on application.

Advertisements of Mills for Sale or to Rent; Partners, Help or Situation Wanted, or of a similar character One cent per word each insertion, or where four consecutive insertions are ordered at once, the charge will be Three cents per word. No advertisement taken for less than 25 cents. Cash must accompany all orders for advertisements of this class.

Orders for new advertisements should reach this office on Friday morning to insure immediate insertion. Changes for current advertisements should be sent so as to reach this office on Saturday morning.

#### EDITOR'S ANNOUNCEMENTS.

Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or the grain and flour trade.

Correspondents must give their full name and address, not necessarily for publication, but as a guarantee of good faith.

This paper has no connection with a millfurnishing house and aims to represent the trade without prejudice, fear or favor.

Address all communications

**THE MILLING WORLD,**  
BUFFALO, N. Y.

Entered at the Post Office, at Buffalo, N. Y., as mail matter of second-class.

#### SITUATIONS WANTED.

Advertisements under this head, 25 cents each insertion for 25 words, and 1 cent for each additional word. Cash with order. Four consecutive insertions will be given for the price of three.

#### SITUATION WANTED.

Head miller with over 20 years experience want to make a change this spring. Address, A. MILLER, 67 Weaver Alley Buffalo, N. Y. Ad-4t

#### WANTED.

A situation to run a 50 to 100-barrel roller mill. Pennsylvania, New York, Ohio and Michigan preferred. Address MILLER, Box 75, Union City, Erie Co., Pa. 86

#### WANTED.

A situation in some flouring or grist mill, by a man who has had good experience with the buhr system. Can furnish best of references. Address, THOMAS H. NICHOLAS, DeRuyter, N. Y. 14

#### SITUATION WANTED.

A situation wanted by a stone and roller miller, 14 years' experience, to take charge of custom mill, or work as second in first-class roller mill. Address WILLIAM H. EATON, North Ridgeway, Orleans County, N. Y. 3

#### SPECIAL ADVERTISEMENTS.

Advertisements of Mills for Sale or Rent, Partners Wanted, Machines for Sale or Exchange, etc., etc., cost 1 cent per word, for one insertion, or 3 cents per word for four insertions. No order taken for less than 25 cents for one insertion, or 50 cents for four insertions. Cash must accompany the order. When replies are ordered sent care of this office 10 cents must be added to pay postage.

#### WANTED.

The address of Mr. Buhr Miller who was formerly a citizen of Prosperity removed to Adversity, and when last heard from was in Despondency looking for a job. By the will of his uncle Oliver he becomes heir to a modest fortune to obtain which he should address the FLENNIKEN TURBINE COMPANY, Dubuque, Iowa. (Exchanges please copy.) Administrator.

#### MILL MACHINERY FOR SALE.

One No. 0 Standard Combined Separator, Smutter and Brush Machine; new, best make.  
One 20-Inch Under-Runner Portable Mill, French Buhr Stone, capacity 10 to 12 bushels per hour; new, best make.  
One 14-Inch Vertical Feed Mill; best make, new, a bargain.  
One No. 6 Dustless Separator; new, a bargain.  
One No. 1 Full Rigged Combined Dustless Separator; new, a bargain.  
Four Corn Cob Crushers, right or left hand, driven from above or below, best make; capacity 40 to 60 bushels per hour.  
Three No. 1 Corn Shellers, capacity 200 to 300 bushels per hour; new.  
One No. 2 Purifier. New. Best make. A bargain.  
One 20-Inch Portable Mill.  
One 18-Inch Double Gear Portable Mill.  
For particulars address, FRANK SMITH, care of THE MILLING WORLD, Buffalo, N. Y. 5tf

## FOR SALE CHEAP.

One 36-In. Iron Frame Portable Mill, French Burr Stone, Used about 2 months.  
One 20-In. Vertical Mill, French Burr Stone, Used about 30 days.  
Three Pair 42-In. Old Stock Feed Stones.

FOR PARTICULARS ADDRESS,

**SAMUEL CAREY, 17 BROADWAY, NEW YORK.**

#### FOR RENT.

Clinton Mills, at Black Rock, Buffalo, for rent on reasonable terms, recently repaired and put in good order. Apply to CHAS. DANIELS, over 311 Main Street, Buffalo, N. Y. 6tf

#### FOR SALE.

One-Hundred Barrel Roller Mill, in one of the best winter wheat sections of the country. Wheat brought to the door in wagons, and flour can be shipped in any direction by six railroads and river. Splendid home market, here and in Louisville.

Also a Sixty-Barrel Custom Mill, roller, running full time on custom, and can hardly keep up. Paying well now, but satisfactory reason for selling. Either or both will be sold cheap. J. M. HAINS, New Albany, Ind. 263

RECENT reports show weak spots in the winter-wheat crop conditions. The weak spots are both large and frequent. The advancing season will make them more and more apparent.

THE announcement of the Consolidated Roller Mill Company, that they propose to invite further doses of the Blodgett medicine, ought to stir up the secretary of the Millers' National Association to make pointed remarks about "patent sharks" and their "rascally practices." The text is at hand. The occasion calls for it. What will the secretary do?

THE wheat "bears" of the present seem to have more grit than the "bulls." The "bulls" have many things in their favor just now, but they do not seem to know enough to go under shelter when it rains. They seem to be afraid even to raise their umbrellas. Meanwhile the "bears" are making hay while they make the sun shine just as they wish to have it shine. Wake up, you sleepy, stupid "bulls"!

DESPITE the brave efforts of the "bears," the reports of the damage to the winter-wheat crop by the fickle winter are confirmed. All recent reports unite in showing that the forward plant was badly frozen and otherwise damaged, and that, when the growing season is once in, the injury will prove to be serious and widespread. The conditions for spring seeding are not the most encouraging, and in some important regions they are decidedly bad. Present conditions seem to justify the prediction that the wheat crop of the United States in 1890 will fall considerably below that of 1889, even if all the conditions should be fairly favorable from middle April until harvest.

ONE St. Louis speculator, Moses Fraley, did not relish the recent report on frozen wheat crops made by the Illinois State Board of Agriculture. He wired the following dispatch to Governor Fifer: "Daily telegrams dated Springfield, as if emanating from the Agricultural Department, appear in all papers and contain alarming statements concerning wheat crop in Illinois. Some one on inside or outside manipulating department for speculative purposes." Governor Fifer turned this insolent dispatch over to W. C. Garrard, secretary of the state Board, who sent the following stinging reply to the impudent St. Louis speculator, Moses Fraley: "Your telegram to Governor Fifer has been handed to me for reply. All the information concerning the injury to the growing wheat by the recent freezing, given to the press during the last week by me, was gathered from members of the State Board of Agriculture residing in the central and southern divisions of the State of Illinois by personal interview. The Illinois State Board of Agriculture is composed of gentlemen who give their time to the 'promotion of agriculture and horticulture, manufactures and domestic arts' gratuitously, and could not be influenced by any such motive as charged in your telegram. In fact, you are the first man who ever intimated that the Illinois Department of Agriculture, which is controlled by the State Board of Agriculture, could be manipulated in speculative interests. The reports of this department are not compiled in the interest of speculators on the Board of Trade, but for the public at large, and are based on the best possible information obtainable from reliable sources, and are given in advance to the press only, regardless of their effect on the market." This spirited reply is appropriate to the occasion. The market gamblers are generally men so lost to all sense of honor, so systematically dishonest in their own transactions, that they can not believe that there is any honesty in anybody else.



## MILLING PATENTS.

Among the milling patents granted April 1, 1890, are the following:

Melvin A. Kidder, Youngstown, Ill., No. 424,483, a grain-meter, containing the combination, with a stationary bin and the vertical standards projecting from the sides of the bin, of a pair of buckets having hinged bottoms mounted between the standards and provided with opposite pairs of studs, straps loosely connecting the studs and having central studs taking bearing in openings formed in the standards, an oscillating hopper provided with studs at opposite sides and taking bearing in the openings formed in the standards, opposite straps crossing each other and having their upper ends loosely connected with studs projecting from the opposite sides and at each end of said hopper, and having their opposite ends connected to studs projecting from the bottoms of oppositely located buckets, a scale-arm projecting from the oscillating hopper, provided with adjustable weight, and a pivoted lever adapted to be actuated by the scale-arm and actuate the tally-box.

Andrew Barclay, Kilmarnock, County of Ayr, Scotland, and James Walker, Glasgow, County of Lanark, Scotland, No. 424,638, a pneumatic grain-conveyor.

Geo. McAllister, Sterling, Kan., No. 424,808, a wheat steaming and heating machine, containing the steam-supply pipe, a valve therein, the steam-jet nozzle, the hollow conveyor shaft perforated in the forward portion of its length and imperforated in the rear portion, the casing, the hopper located at the forward end of the casing, and the hopper located above the rear portion of the perforated part of the pipe.

## EARLY ENGLISH ROLLER-MILLS.

The invention of roller-mills driven by water, steam or other power, is lost in the obscurity of the past. Hartlib, who wrote A. D., 1650, recommends their use for crushing horse-corn, malt and wheat into flour by steam-power. But it is evident they were in use before his day, Hartlib's invention being the driving of them by steam-power. Mr. Mortimer, in his work on Agriculture, A. D., 1710, gives an illustrated description of a two-roll roller-mill, which he strongly commends, but he only claims the differential movement of the rolls so as to give them a grinding action. Mortimer also proposed a roller working against a fixed adjustable breast, the breast and the roll being both made of French buhr stone. Both Mortimer's plans were extensively carried out toward the close of the last century, and even up to the present time, but chiefly in preparing food for cattle. They were also used as family mills for grinding wheat into flour, a popular idea at one time which has never found favor in practice. Smooth rolls are generally known as crushing mills and fluted rolls, the flutes being spirally cut by machinery, grinding or kibbling mills. Neither of Mortimer's mills was patented, but improvements on both plans were patented at an early date by other inventors. Thus, No. 675, Jan. 24, 1753, was granted to Isaac Wilkenson. In this case the improvement consisted in casing the driving teeth along with the roll.

No. 1,090.—Nov. 26, 1874, Samuel Watson. This is a roller stone on a horizontal axis, working against an adjustable breast, as in Mortimer's second plan.

No. 13,065.—April 30, 1880, May and Leggett. Threespirally grooved rolls are placed side by side in a frame. The grooves of the different rolls differ in degree of fineness, so that the middle roller and the roller on one side are adapted for grinding fine, and the middle roller and the roller on the other side for grinding coarse.

No. 1,866.—July 4, 1857. This is the French roller-mill already noticed. The application was not sealed, and the provisional specification is so badly drawn up as hardly to amount to a prior publication of the French invention.

No. 1,640.—July 20, 1858, granted to William Newzam Nicholson, of Newark. The invention consists in driving the adjustable roller of crushing mills by means of a pinion working into cogs formed on the internal edge of an annular wheel mounted on the axle of the roller. Secondly, in sup-

porting the bush of the movable roller in a slot of such a form that the roller as it moves may describe an arc of a circle about the center of the pinion; also for varying the distance between the rollers, and I use an iron slide in which the bush of the movable roller is fixed, with a circular hole to receive a flanged eccentric; and in holding the eccentric in the required position I use a notched disc, into the notches of which a catch drops for the purpose. When the mill has two pair of rollers I connect the two bottom rolls by spur or other wheels in the usual manner, but adopt a similar slide and eccentric, which I arrange in such a manner that one of the rollers may be thrown out of work when it is not wished to crush with the lower pair.

In Mortimer's and Wilkenson's mills the length of the teeth allowed adjustment, but at a sacrifice of the pitch lines which Mr. Nicholson obviates. The use of more than one pair of rolls was well understood prior to the date of Mr. Nicholson's patent (1858), who, it will be observed, provides for a mill with two pairs of rollers. Mr. Gustav Adolph Buchholtz has taken a leading part in roller-milling, and in two patents, 3,113 in 1862, and in 976 in 1863, he goes in for the removal of the bran and germ prior to the manufacture of semolina, middlings and flour, by processes of decortication. And, although not successful, it led to favorable results. Mr. Jonah Hadley of the "City of London Flour Mills" followed in patent 3,632, Dec. 21, 1867, but the project was too complicated to be practically successful. At the same time, like its predecessor, it involved several elements in the march of progress. Two pairs of crushing rolls are shown. One of each pair is less than the other, thus producing differential surface speeds with equal speeds of the axles. The small roll is the adjustable roll, its bearings being adjusted by a set-screw. The one pair is below the other, so that in passing through both the grain is twice crushed.

No. 778.—1859, and 3,235, 1868. Thomas Carr of Bristol. This patent is too well known to require a detailed description. The first patent was prolonged for six years. It was used for the manufacture of flour, both by itself and in combination with rollers and dressing-machines.

No. 1,386.—1867. John Norman and William Hay. No. 3,755.—1868. John Norman. The former patent is for drying the flour in the process of milling, and the latter for reducing the grain to semolina by serrated plates and then crushing between two smooth rolls, the flour being bolted from the bran, the germ passing over the tail as "germ meal."

No. 2,396.—1859. John Bruckshaw, Henry Bruckshaw and William Scott Underhill. An exhaust-fan for threshing machines and corn mills. This has been extensively used in threshing machines by Clayton and Shuttleworth and by Mr. Underhill. The patent covers its use in flour-mills, in which it is now largely used.

No. 2,535.—Sept. 26, 1871. Robert Girwood, Edinburgh. Along with their rotating motion a reciprocating longitudinal motion is given to the rolls. The longitudinal reciprocating motion may be given to one or both of each pair by means of cams, eccentrics or cranks. In the drawing the longitudinal reciprocating motion of one of the rolls is given by crank movement. The bearing of the adjustable roll is by set-screw and the pressure of the rolls to work is by spiral spring. The removal of the bran, including the germ, and the breaking up of the wheat berry into a molina, is effected progressively. Instead of a number of pairs of rolls, set closer and closer together, it is proposed to pass the grain through one pair several times, the rolls being set so much closer each time. The product from one pair of rolls is dressed before it goes to the next pair of rolls, and so on. This, although not expressly specified, is obviously included.

No. 1,138.—March 27, 1873. George Ramsey, hay and flour-miller, Glasgow. This is a combination of millstones and rolls. The patentee says: "In practice I proceed in the manner following: I clean, screen and end the wheat grains, by preference performing the latter operation between grey horizontal stones. After separating the ends I break or split the grains each into two halves or pieces longitudinally, or as nearly into two halves as is possible between buhr stones with faces acting in a horizontal plane, and preferably with



sickle dress. Ordinary stones, rolls or other appliances may be used. At this stage of the process I remove by revolving wire screens, vibrating sifters or other mechanism aided by currents of wind, if necessary, the black particles along with the germs from the fleshy parts of the wheat. The latter, the fleshy parts, are then ground into flour."

No. 823.—March 6, 1874. This is Wegmann's porcelain roller-mill, now in successful use and too well known to require a detailed description. The inventor says: "The advantages of this machine are that, as no cellular fibers are torn, the power usually applied is saved; that, on account of the complete separation of the bran and the germ and the membrane particles, the flour itself is firmly ground, pure and ready for use, and owing to the separation of the cells containing the cereals, the flour so produced will not even during fermentation lose its color, rendering it very suitable for export or for storing." Mr. Wegmann had used iron rolls before the date of his patent and was well acquainted with the Hungarian system of roller-milling, with the use of break-rolls. Hence he confines his patent almost exclusively to the use of porcelain rolls in milling.

By the middle of the present century roller-milling, in the modern sense of the phrase, was generally understood by milling engineers, especially those who had an extensive connection with Hungary and other centers of roller-milling on the Continent. The International Exhibitions of 1851 and 1862, London, and those of Paris, 1867, and Vienna, 1873, on the Continent did much to spread abroad a practical knowledge of roller-milling. Millers were slow to embrace the new system, being captivated with the Bovil blast and exhaust, but the increasing demands for the flours of Hungary and heavy importations made themselves to be felt in the English market, which led to a visit of English millers to the roller-milling centers of the Continent to judge for themselves, the result being the general adoption of roller-milling.

#### REAL POETRY!

##### STANDING ADS AND DODGERS.

The little "special notice,"	Wondering how it happens
The little "business ad.,"	Things are as they is;
Make the mighty merchant	Scattered on the sidewalk,
And his patrons glad.	Blown about the street,
Then the double column	Crumbled into tatters,
Of "extra big display"	Trampled under feet;
Follows closely after	So the useless dodger
In a natural way;	Quickly meets its doom,
And the eager public,	While the advertiser
Gathering in throngs,	Greets a lively boom.
Leave their business orders	The little "special notice"
Where the trade belongs.	And "business ad." are game;
But the dodger nuisance	They are cheap and plain to look at,
Keeps about his biz,	But "get there" just the same.

#### THEY HAVEN'T GOT ENOUGH YET.

Evidently the Consolidated Roller Mill Company are still in the hands of the lawyers. The sweeping Blodgett decision against them has not satisfied their legal advisers that it would be more profitable to stop the foolish and expensive litigation. Acting on what must be, in all charity, called bad advice, the company have published the following statement, which we reprint as a matter of unimportant news:

Nearly three years ago we published our purpose to attempt to establish our patents by actions against manufacturers, and, if we succeeded, to enforce them. We always intended to prosecute the cases, if necessary, to the Supreme Court. Some of them, we were advised in advance, we could not expect to carry in the Circuit courts. The Odell patents had already been sustained by full court, presided over by a justice of the Supreme Court. One of the Gray patents was subsequently sustained, in the Coombs case, and we did not expect conflicting opinions in different circuits upon the same facts; such an occurrence being unusual if not unprecedented. We have moved for a re-hearing in the Barnard & Leas case. If refused, we shall prosecute our appeal; and other pending cases will also be brought to a hearing. While the antics of some of our defendants are amusing, they indicate two things: First, they wish to have it believed that they have escaped a great danger by which they were evidently, and naturally, alarmed; and, second, their statement that they had won a "signal victory over

one of the strongest attempts ever made to control and monopolize one of the greatest interests," means just this, that while all the world may use the older roller-mills, the adjustments added by Gray and patented by him are so indispensable that if his patents are sustained they will give a practical monopoly. We entirely concur in this opinion, at least so far as any substitutes have yet been developed. We repeat what we said in the beginning; while we don't intend to try our cases in the newspapers, we do not desire that any one should be deceived as to our purpose, which is to prosecute these cases to the Supreme Court if necessary.

CONSOLIDATED ROLLER MILL COMPANY.

This peculiar document, with its bluff and bluster, its comments on "unusual if not unprecedented" doings in courts, and its references to "the antics of some of our defendants," will be accepted by millers, builders and furnishers for just what it is—nothing! Everybody interested will be pleased to see the case pushed to the highest courts and settled so decisively and so definitely, that even the Consolidated Roller Mill Company and their legal advisers shall be willing to let it drop. The slush in the Consolidated statement about the Gray adjustments constituting a "practical monopoly," if sustained, is a libel on a number of roller-mills of the highest grade, including those made by the Case Manufacturing Company, of Columbus, Ohio, by the J. B. Allfree Company, of Indianapolis, Ind., by the Dawson Roll Works, of Harrisburg, Pa., by Munson Brothers, of Utica, N. Y., and by the John Hutchison Manufacturing Company, of Jackson, Mich., all of which are absolutely unaffected by the Gray adjustments. The Consolidated concern tries to make it appear that the only mills worth having are the ones they make, and the millers can see the cat under the meal in the squeak they have emitted under the Blodgett pressure.

PROTECTION, which certain American fanatics denounce as the greatest of all conceivable errors and burders, is not considered so great an evil, from the American standpoint, by interested Europeans. For instance, the London, England, "Iron and Coal Trades Review," discussing the subject of iron and steel manufactures in the United States, after acknowledging the great growth of industry in this country and our now almost completely achieved independence of Great Britain for a supply of iron and steel, says editorially: "We are forced to conclude that, just as in the case of crude iron, steel and certain descriptions of manufactured iron, the United States will shortly be completely independent of us in other respects. That market, valuable as it undoubtedly was but a few years since, is becoming of less importance to us day by day. Protection, which it was thought would only impede the progress of the American iron industry, has proved to be a very 'rock of its salvation,' and, much as we may regret the result for our own sake, the American people, it must be admitted, have shown a much keener appreciation of what was essential to their progress than our own doctrinaires would be willing to admit." This is a frank acknowledgment of the mighty potentiality of protection in developing the resources of the United States, and we commend it to all American free-traders. The English journal quoted from tries to draw some consolation out of the prospect. It does so in the following words: "When the time, however, comes when the American iron and steel manufacturers will be forced to look for markets abroad, protection will help them but little. This Germany is already finding out to her cost, and the same experience undoubtedly awaits the United States. So long as production barely equals the home consumption, the American iron and steel industries will continue to flourish under the existing regime, but no longer. Already production promises to exceed consumption in a very short time, and when that point is reached America will have to alter, perhaps entirely recast, her whole fiscal system. Until then there will be a steady growth in American iron and steel production, characterized by great prosperity for both masters and workmen. It will be otherwise when foreign markets become a necessity for the United States, as they are for us at the present moment." Sufficient unto the day is the evil thereof. Our present concern is to win control of our own markets. Until that is done,



we shall be well employed in leaving the future to take care of itself. When foreign markets shall have become a necessity for us, we shall not be found unable to make any change in our fiscal, tariff or industrial systems that may be required to meet the emergency. Meanwhile, our British cotemporaries should not omit to state the important fact that, in certain important lines, in which our production has outrun our consumption, we are already exporting manufactured wares of iron and steel, and that a very considerable quantity of American wares in these lines is actually taken by Great Britain at the present time. Evidently, if our transatlantic neighbors are depending upon our protective system to hamper us hopelessly in the future, they are putting their trust in a broken reed. We are a protectionist nation, not too much protectionist, but just enough protectionist to suit any and every emergency. There is to be an American merchant fleet in the near future, and when its services are called for to carry American surpluses to foreign ports, it will be impossible for any competitors to retard our progress. It has long been the British contention that "the United States is naturally an agricultural country," but ere long it will be acknowledged that, besides being the leading agricultural country of the world, this Republic is the greatest manufacturing and commercial nation on earth. For the present, and in the future so long as necessary or expedient, protection will continue to be the "rock of our salvation."

#### TWO CANADIAN VIEWS.

The free-traders of France propose to let the protectionists have full swing in the matter of increasing the tariff duties, confident that the experiment will result in failure. Give protectionists plenty of rope and they will hang themselves. —*Montreal Herald*.

The free traders of Canada will have to do just what the free traders of France have done—let them have full swing, confident that protection will result in as unbounded success in Canada as it has in the United States, France and Germany. Yes, give them plenty of rope and they will hang Canada high in the galaxy of great and glorious nations that have achieved industrial greatness through the manufacture in Canada of all the country requires. "The nation that manufactures for itself prospers." —*Canadian Manufacturer*.

#### THE BACKWARD FRENCH MILLER.

French millers are proverbially slow. One of them writes as follows to a French milling journal: "I am renting a small water-mill of four pairs of good stones, but I have near me a complete roller mill, which makes whiter flour than I do, and which forces me to sell my flour at 79 cents to \$1.02 per 280 pounds cheaper than the roller mill obtains. I am therefore under the necessity of improving my color. In fact, I am at the end of my tether. My landlord is disposed to go to some expense to enable me to improve my plant, but he will not pay sufficient. The plans sent in by a number of milling engineers show for the same amount of machinery a cost of from \$1,250 to \$3,725; a fact which is very perplexing to me. I therefore ask your advice as to what is strictly necessary for me to do. I may add that I have good cleaning machinery with three pairs of stones on wheat and one on middlings. I would retain two pairs for grinding and one pair for middlings, and I would desire to preserve my meal-bolt, with divider and bran-brush, and would wish also to retain my present dressing-machine, adding a mixer. I am advised to put up a break-roller mill and centrifugal, and I am told, too, that I ought to have a roll on my bran, but it seems to me that my bran-duster is sufficient. I want also a purifier and smooth rolls for part of my middlings. Would not a porcelain roller suit me, and what do you recommend as the best purifier?"

The answer returned by the journal was as follows: "What you have to do will not cost you much. You do not require a break-roller mill, but a special apparatus called a smooth first-break, to follow your wheat-cleaning, and which would cost you \$130; a small magnetic machine costing \$20 would also be necessary. This would enable you to extract the

black crease-dirt and send your chop perfectly pure to your stones. A bran-roller mill is also unnecessary, for if it were necessary it would be proof that your stones were not doing good work; a bran-brush is sufficient. A porcelain roll for middlings is good, but a simple smooth roller-mill with two rolls, doing 525 pounds per hour, would be preferable; it would reduce all your middlings and make whiter flour, and there would not be the same risk of bad work in case of neglect and of running empty as there would be if you used a porcelain roller-mill. This smooth-iron roller-mill would cost you \$350. To follow this roll and to avoid the large expense of a centrifugal, you might use your reel as before, but a "detacheur", costing \$40, would be necessary. A good simple purifier can be had for \$140. If to this machinery you add another reel for mixing the flour, which would cost \$360, you would be in a position to do very good work. The expense of shafting and transmission is difficult to estimate, not knowing your local circumstances, but we might suppose it to be about \$650, so that your total outlay would be about \$1,700, and you would be able to make very fine flour, and, by good management, better flour than your competitor with the complete roller plant."

—*Exchange*.  
 OUGHT a baker to be considered a needy loafer because he is frequently seen kneading a loaf?—*Exchange*. Doughn't be asking kneadless questions like that. We can barrel little of some kinds of buns, but we are not bread to endure what is not kneaded.

#### PROBABLE EFFECTS OF SWEATING GRAIN.

Concerning the effect of "sweating" grain, Professor J. N. Sanborn says: "After the sweating once sets in, the straw becomes moist-like or tough, and threshing is much slower and more unsatisfactory. After the sweating is well set in, the straw is so tough that it will, unless fed in very slowly, wind around the cylinder and clog it, while the oats are more imperfectly threshed. For this reason, if for no other, it is always desirable either to thresh the grain at once, after it has well dried in the field, or to allow it to stand in the mow until the sweating is well over. It is held by some that, during the sweating period, the grain grows plumper and that it dries out better, so that it will keep much better in bulk after threshing. Upon these points we have no data of careful trial, and only speculation can be indulged in beyond the knowledge of general and somewhat loose observation. The heat resulting from the process of sweating no doubt leaves the grain drier, as observation is that it will go into the bin more safely. Of course, heat itself tends to vaporize water. Grain sweating can occur only in the presence of moisture, as that is essential to it. We know that green hay will heat when hay dried to a certain content of moisture will not heat. We know that when the moisture of a body is reduced to a certain content that heating stops. These questions are complicated with others of a chemical nature that the specialist in chemistry should consider, as during heating water is formed under certain conditions of air access, as a product of decomposition. Whatever may be the chemical formula in this case, I believe it is a matter of observation that the conditions in the ordinary mow are such that the grain itself will keep full more successfully after going through the process.

"But the question of chief interest that arises is the influence of the sweating process on the weight of the grain and straw. It is thought by some farmers that the grain is heavier and plumper than it would be if the grain did not go through the sweating process. Upon this point there is no exact data known to me. There is no doubt that the grain, when cut before its full weight of kernel is attained, will grow from the straw. This is a generally understood fact, although no proofs have been given of it. Admitting that the grain grows from the straw when cut just after going out of the dough state, the question arises whether sweating would extend this process. It does not seem probable that the sweating process will result in increasing the amount of nutrition that will be carried from the stem to the seed. As at first people saw no probability that the kernel should grow



from the stem after cutting, but now admit that it does, so it at first seems probable that the sweating process will not add to the weight of the grain, yet it must be unsafe to deny that such a growth does occur. Sweating is a sort of fermentation and occurs by virtue of the moisture, heat and air available in newly stored grain. Can we expect this process to be on the whole beneficial? Notwithstanding the influences noted, I must think not, until good evidence to the contrary is adduced. One of the results of this sweating or fermentation is the evolution of heat. Heat is here, as in the burning of wood in the stove, the product of burning or slow combustion of the grain crop thus fermenting. Heat must be the product of some moving cause, and as it is not the conversion of any outside force into it, it must arise from the consumption of the heating crop. In other words, there is an actual loss of wheat of crop going on so long as heat is being evolved."

#### RESULTS OF FREE TRADE.

England is called "the home of free trade." To a certain extent the name is appropriate. Necessity compels Great Britain to buy where she can buy most cheaply. The result is peculiar. A free-trader prints in the London "People" an extract from his diary showing the sources of articles commonly used in Great Britain. He says: "Yesterday morning I rose early; my hot water was brought in a Belgian zinc jug, and I worked half an hour in my garden with a Belgian fork and an American hoe. I then took off my French boots, put on a pair of Algerian slippers, and went in to breakfast, which consisted of bread made from Odessa wheat, Normandy butter, American bacon, Mocha coffee and a few thin slices of German sausage as a relish. Comparing my Geneva watch with the American clock, I found it was time to set forth; so I put some American tobacco into a French pipe and, having lighted it with a Swedish match, I went to the railway station, with its Belgian iron frame-work, from which a German engine drew me to the city over rails made in Belgium. Here I worked for four hours with an American stylographic pen, and then went to luncheon: American wheat bread, butterine from Canada, Australian mutton, Swiss cheese and Vienna beer. The knives were American, and the waiter was a Swiss. I consoled myself with a Havana cigarette and continued my toil. At seven I prepared for dinner by drinking half a glass of Spanish sherry with Dutch bitters. My dinner was made up of Portugal oysters and Chablis, consomme soup (which came in a powder from France), tinned entrees (from the same country), American beef, Italian cheese and French wine. A trifle of Chartreuse and a Manila cheroot followed, and a cup of East India coffee brightened me for my journey home. Here I found my wife playing German music on a French piano, with a French shade on the lamp. I took out my Italian violoncello and, having applied some fine French resin to my new Leipsic bow, played for some time with her. Abruptly breaking off, I told her my adventures during the day in much the same language as above. She grew excited (being a Fair Trader), and assured me that though men might have such experiences, the case was different with women, I replied with reminding her that she got her bonnets, gloves, boots and most of her clothes from France (I spare you the details), her hair from Russia and her teeth from America. She finally scolded me in German. I retorted in Portuguese, and then, seizing my hat and Malacca cane, I left the house and spent the rest of the evening at the French plays, going home in an American tram-car and sleeping on a French bedstead."

BRITISH manufacturers, it has been asserted, are suffering more and more from competition on the European continent, more particularly in Germany, and it is intimated that loss of trade in this direction is liable to become permanent. A London correspondent of one of the Sheffield papers tacitly concedes the truth of the allegation. The chief concern in England arises from the multiplication of technical schools on the continent at various points, not institutes and colleges, but simply mills and work-shops established "for the purpose

of communicating England's manufacturing secrets" and instructing foreigners in quickness of eye and deftness of hand. The lessons are practical and the schools are profitable. The correspondent says: "We hear much boasting of the progress the nations of Europe are making in rendering their people independent of our mills and workshops. This boast is not unfounded. Our Continental customers that were are today our rivals. True, they take our coal, our iron, our re-shipped raw material. They take, also, such manufacturing machinery as they have not learned how to make for themselves, and when they get it they mold from it and reproduce the like of it in their own workshops. We import that which we used to make; we take the bread of the children and cast it to strangers." Still, free-traders in England have not ceased to declare that protection in Germany and other continental countries has utterly incapacitated those countries from competing with England in manufactures. Are we to believe that in England, as in the United States, the free-traders are endeavoring to overthrow facts by using theories and falsehoods as weapons? It looks that way.

THE following comparisons of results of the working of the American and British patent systems have been circulated by the Inventors' Institute: Cost of patent—British £154; American £7 10s. Duration—British 14 years; American 17 years. Number of applications in 1887—British 18,051; American 35,613. Number of patents granted—British 9,410; American 20,429. Income of Patent Office—British £124,279 7s. 9d.; American £228,902; expenditure of Patent Office—British £81,577 5s. 4d.; American £198,892. Surplus, applied to the revenue of the country,—British £42,702 2s. 5d.; American, added to patent fund, £30,010. Patent fund—British none; American £651,498. British patents last year 9,799; United States patents 20,420; German patents 3,921.

#### A NEW METHOD OF TREATING DISEASE.

##### HOSPITAL REMEDIES.

What are they? There is a new departure in the treatment of disease. It consists in the collection of the specifics used by noted specialists of Europe and America, and bringing them within the reach of all. For instance the treatment pursued by special physicians who treat indigestion, stomach and liver troubles only, was obtained and prepared. The treatment of other physicians, celebrated for curing catarrh was procured, and so on till these incomparable cures now include disease of the lungs, kidneys, female weakness, rheumatism and nervous debility.

This new method of "one remedy for one disease" must appeal to the common sense of all sufferers, many of whom have experienced the ill effects, and thoroughly realize the absurdity of the claims of Patent Medicines which are guaranteed to cure every ill out of a single bottle, and the use of which, as statistics prove, *has ruined more stomachs than alcohol*. A circular describing these new remedies is sent free on receipt of stamp to pay postage by Hospital Remedy Company, Toronto, Canada, sole proprietors.

#### SPECIAL NOTICES.

##### BOLTING CLOTH.

Do not order your cloth until you have conferred with us. It will pay you, both in point of quality and price. We are prepared with special facilities for this work. Write us before you order.

CASE MANUFACTURING CO.,  
Columbus, Ohio.

Office and Factory, 5th Street, north of Naughten.

#### TOLEDO MILL PICKS AND STONE TOOL MFG. CO.

Manufacturer

and Dresser of

#### MILL PICKS.

Made of the best double-refined English cast steel. All work guaranteed. For terms and warranty, address, **GEO. W. HEARTLEY**, No. 297 St. Clair Street, Toledo, Ohio. Send for Circular.

N. B.—All Mill Picks ground and ready for use (both old and new) before leaving the shop. No time and money lost grinding rough and newly dressed Picks. All come to hand ready for use.

ALSO MANUFACTURERS OF

Shafting, Pulleys, Hangers, Coupling, Machine and  
Jobbing, Etc., Etc.



# Practical Notes

**MUSIC IN GAS.**—A musical gas machine, called the pyrophone, has been brought out in England. Its compass is three octaves, and it has a keyboard and is played in the same manner as an organ. It has 37 glass tubes, in which a like number of gas jets burn. These jets, placed in a circle, contract and expand. When the small burners separate, the sound is produced; when they close together the sound ceases. The tone depends on the number of burners and the size of the tubes in which they burn, so that by a careful arrangement and selection all the notes of the musical scale may be produced in several octaves. Some of the glass tubes in which the jets burn are nearly 11 feet long.

## GENERAL NOTES.

ACCORDING to Tyndall, the heat which the earth receives from the sun in a year is sufficient to melt a layer of ice 100 feet thick covering the whole earth. But the total heat emitted by the sun is 2,300,000,000 greater. This would melt ice surrounding the earth at the rate of 2,400 feet in depth in one hour, or boil in the same time 700,000,000,000 cubic miles of ice-cold water, or 800,000,000 while a person takes a single breath. This is as much heat as would be generated by the combustion per hour of a layer of coal 10 feet thick entirely surrounding the sun.

### MORE SOWN AND MORE REAPED.

Experiments to learn the proper quantity of seed wheat per acre have been conducted for six years at the experiment station of Indiana, on ground of average fertility, with natural fertilizers in the last third of September. The following table shows the result.

Pecks of seed sown.	1885 Bu.	1886 Bu.	1887 Bu.	1888 Bu.	1889 Bu.	Av. Bu.
Two.....	16.4	18.5	27.3	17.7	19.9	17.96
Three.....	26.3	24.7	31.4	17.2	23.1	22.34
Four.....	29.1	27.4	38.8	14.2	25.7	25.44
Five.....	32.2	32.3	35.1	14.6	21.6	27.76
Six.....	32.4	34.1	36.5	16.3	26.9	29.04
Seven.....	32.2	35.0	35.7	16.1	29.0	29.64
Eight.....	34.8	36.3	36.2	16.0	31.4	30.94

The yield from four peck, of seed are the average of four duplicate plots. There is growing evidence in favor of thick seeding. For more than six pecks of seed per acre the increase in yield is slight, though enough to justify the extra amount of seed used. The regular quantity at this station is six pecks. In several instances a thicker stand would have given a better yield. The result of four trials of broadcasting and seeder drills are as follows:

	1885 Bu.	1886 Bu.	1888 Bu.	1889 Bu.	Ave. Bu.
Drilled.....	17.3	27.8	10.7	35.0	24.12
Broadcast.....	17.3	27.1	13.5	28.7	16.65
Drilled.....	20.9	25.7	17.8	31.8	24.05
Grain for use drill.....	11.7	19.7	13.8	24.7	27.47

### CANADIAN MILLERS IN COUNCIL.

The Dominion Millers' Association held a meeting in Toronto, Ontario, April 1. A meeting of the executive committee was held in the forenoon. The convention opened at 2.15 p. m., with President John C. Hay, of Listowel, in the chair. The millers present were the following: J. D. Saunby, London; C. Macdonell, Collingwood; Thos. Ball, Erin and Cataract; James Hamilton, Glen Huron; Simon Plewes, Creemore; R. A. Thompson, Lynden; John Clewes, Salmonville; W. H. Finnemore, Burlington; P. R. McDonald, Oxford Mills; Thos. Eagan, Tottenham; John Galbraith, Allandale; Henry Bracken, Boston Mills; D. Plewes, Brantford; J. C. Vanstone, Bowmanville; J. Spindler, Cookstown, Ont.;

R. Noble, Norval, Ont.; Fred. Rallins, Madoc; H. B. Schmidt, Thornhill; W. Galbraith, Toronto; James Wilkinson, Barrie; James Todd, Stratford; Irvine Lake, Hamilton; J. Goldie, Guelph; R. Rayburn, Deseronto; J. R. Dafeo, Napanee; G. S. Baldwin, Aurora; T. M. Syer, Thamesville; G. Carveth, Laskard; R. B. Cooper, Belleville; F. W. Fowles, Hastings; F. W. Hay, Listowel; Alex. Dobson, Beaverton; John Hull, Lakefield; J. T. Flavelle, Lindsay; M. McLaughlin, Toronto; R. Marshall, Plattsville; W. H. Meldrum, Peterboro'; E. S. Edmundson, Oshawa; W. J. Howson, Wroxeter; W. B. Robson, Hamilton; John Brown, Toronto; E. Peplow, Port Hope.

Secretary David Plewes reported the virtual abandonment of buying wheat without any regular inspection; and the adoption of the method of buying by tester. He also detailed the result of the agitation by millers for a change in the duty on flour. His report included a suggestion that, in case Manitoba produces a large crop of wheat this year, some arrangement be made with the railroads allowing some of the crop to be ground in transit to the seaboard. The report was adopted. The exchange question was debated by Messrs. Hamilton, Noble, Stewart, Mitchell, Spink, Syer and Brecken, and a committee, consisting of Messrs. Spink Myers, Syer, Noble and Stewart, was appointed to report on the question. The committee recommended that exchange be abolished, and that flour be supplied to farmers at wholesale rates. The following resolution was unanimously adopted:

Resolved, that this Association heartily endorses the action of the Government in increasing the import duty on flour to 75 cents per barrel, which, so far as duties are concerned, make the duties on wheat and flour equivalent.

The following resolution concerning grinding in bond was unanimously adopted:

Whereas, the Dominion Government for some years past having granted the millers of Canada the privilege of grinding wheat in bond, subject to the following condition: That the product of the said wheat only when exported shall cancel the bonds given, giving twelve months to export said product. Therefore be it resolved that this Association ask the Government to take such steps as they see fit to ascertain if there be any infraction of such obligations, and to take immediate steps to punish any parties who may attempt to avoid the existing regulations thereto.

The financial report showed a deficit of \$600. At the evening session Mr. John Brown read a paper on the relative treatment of American and Canadian millers by the railroads built and supported by Canadian industry and energy. He gave the following comparative statement of the cost of freight: The freight on flour in car lots to-day from Minneapolis to Toronto is 20 cents per hundredweight, or 40 cents per barrel; from New Richmond, Wisconsin, 5 cents per hundredweight, or 30 cents per barrel; from Winona, on the Mississippi river, 15 cents per hundredweight, or 30 cents per barrel, while the freight on flour or an equal weight of wheat from Manitoba averages 47 cents per hundredweight, or 94 cents per barrel. Thus it would be seen that the shipper in Winona can send his product to Toronto for 64 cents per barrel less than his opponents in Manitoba shipping over the same road, while for rating purposes the distance would practically be the same, and he therefore saves enough on his freight discrimination to pay the duty, even at 75 cents, all but 11 cents per barrel. In support of the fact that the Canadian lines were unjustly favoring foreign industries, Mr. Brown quoted liberally from the evidence taken by the Railway Commission at Montreal in 1887, and wound up by saying that while in the United States the people were the bosses of the railroads, in Canada the railroads were the bosses of the people.

The concluding session was held on Wednesday morning, when the freight question was the principal subject of discussion. On the motion of Mr. Brown it was decided that Mr. Dalton McCarthy, M. P., and Mr. W. Mulock, M. P., will be asked to represent the interests of the millers as laid down in their petition regarding the Railway Committee in the House of Commons. The millers are of the opinion that a railway commission is the only body capable of solving the difficulties at present engaging the attention of the trade.



Messrs. Saunby, Hunt, the president and secretary of the association were appointed to wait on the Railway Committee regarding the grinding interests of the millers. Mr. Plewes, who resigned his position as secretary, was re-engaged at a salary of \$600, and Mr. Galbraith, Toronto, was

appointed treasurer. It was resolved to call a special meeting of the association between the 1st and 15th of September. The Board of Trade of Toronto were recommended to call a convention of all the principal associated industries for the purpose of considering the freight question.

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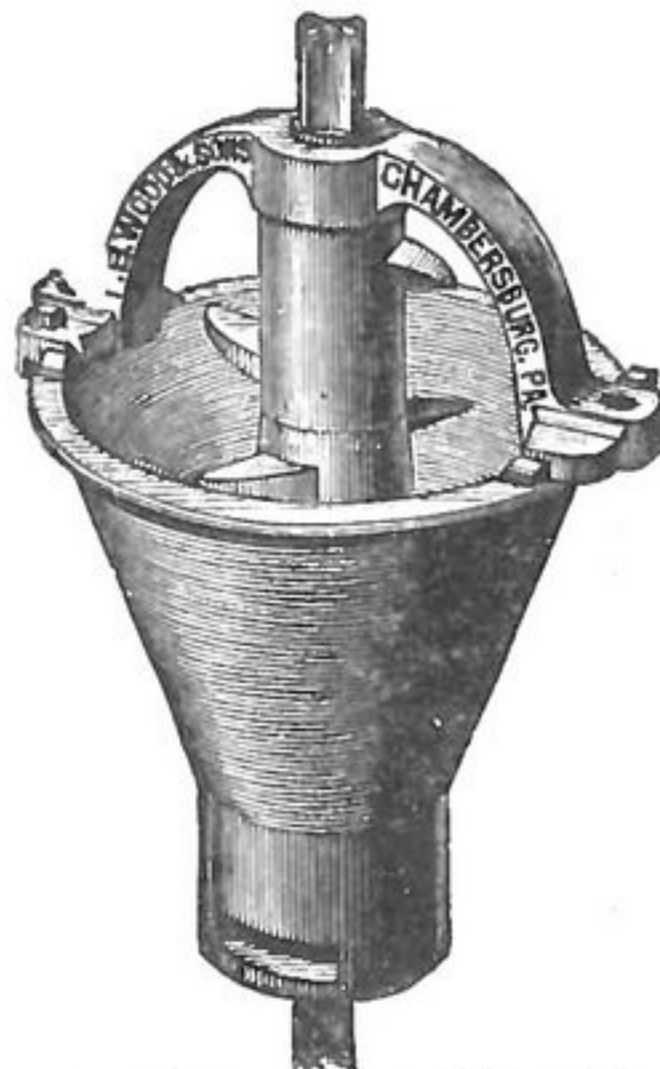
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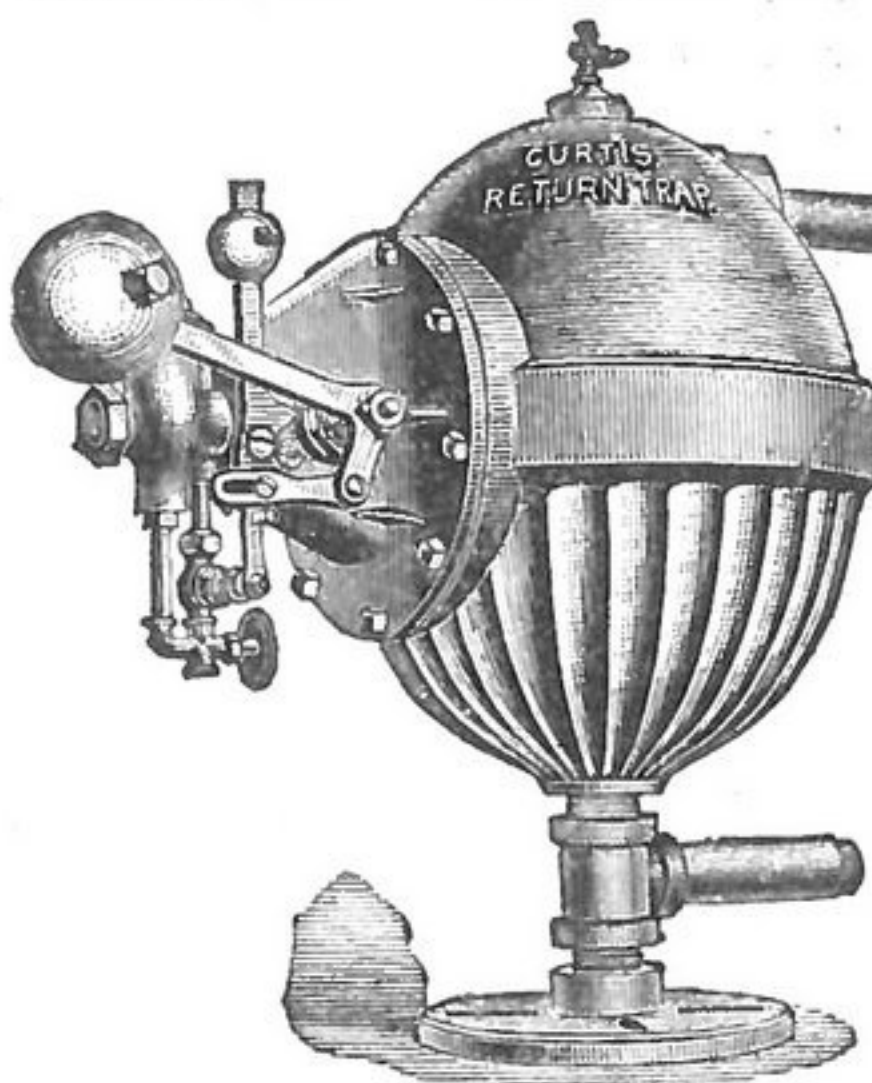
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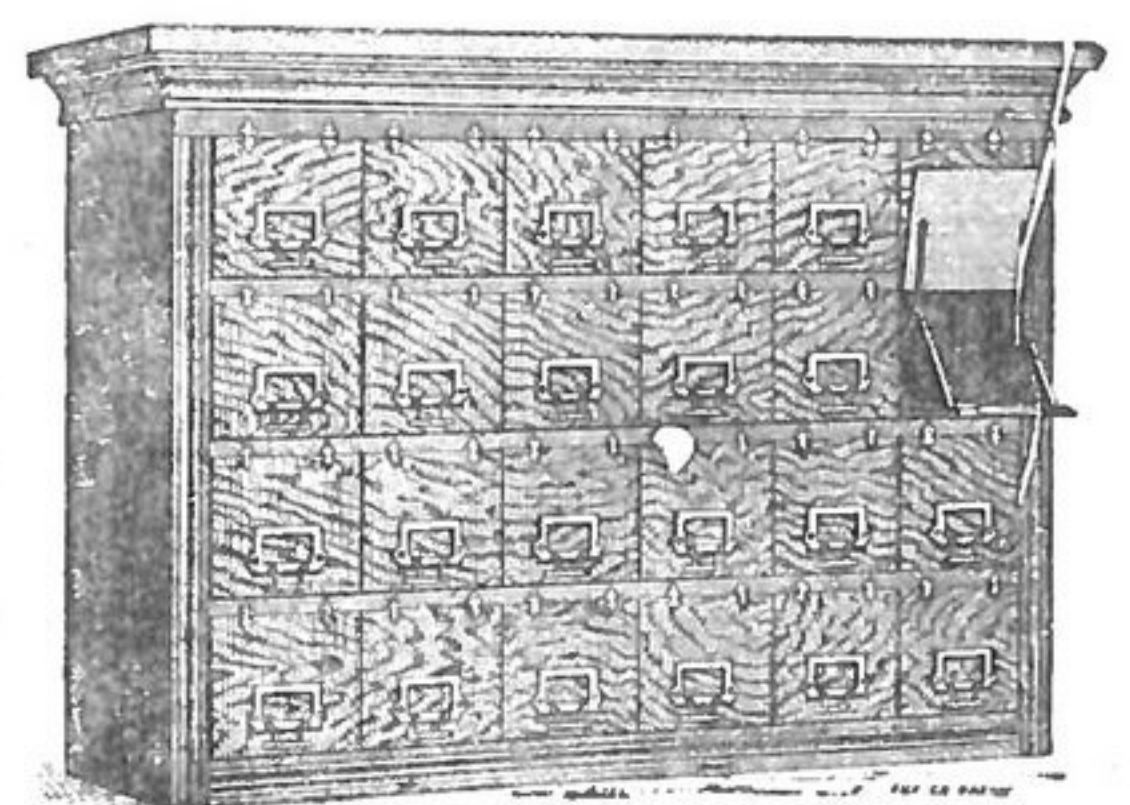
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Beeville, Tex., men project a grist-mill.  
 Waynesboro, Ga., men project a grist-mill.  
 The Arapahoe, Neb., Elevator burned; insured.  
 The Nashville, Tenn., Mill Co. increase capacity.  
 J. H. Jones, Henderson, Tex., projects a grist-mill.  
 E. J. Mercke & Co., Louisville, Ky., enlarge their corn-mill.  
 D. H. Wheeler's grist-mill, Prosperity, S. C., burned; loss \$1,500.  
 S. Hickman, miller, Linwood Station, Pa., is succeeded by J. W. Hoopes & Bro.

The Enterprise Mfg. Co., Barnwell, N. C., want machinery for a new grist-mill.

The Bowman flour-mill, New England, W. Va., has been leased by Pease Bros.

M. Mullins, Brownwood, Tex., has points on a new flouring-mill building in that town.

W. H. Culpepper & Co., Albany, Ga., are building a flouring-mill and a grain-elevator.

P. R. Doub, West Beaver Creek, Md., is engaged in remodeling his flouring-mill to rolls.

The Kaw Elevator, Kansas City, Mo., burned; loss \$32,000; insurance \$19,500; incendiarism suspected.

The Farmers' Alliance incorporated at Knoxville, Tenn., the Knox County Union Roller Mill Co., to build flouring-mills.

The John W. Kaufman Milling Co.'s flouring-mill and grain-elevator, St. Louis, Mo., burned March 29. Loss \$280,000; covered by insurance.

The Farmers' Alliances throughout the country are getting very restive and threatening political revolution. The movement is grangerism under a new name.

W. T. Hutchison and J. B. Whitman, of Sweetwater, Tenn., and C. P. Robertson and others, Chattanooga, Tenn., have incorporated the Mountain City Mill Co. to build a flour-mill. It will erect a mill to be five stories, 50x100 feet, and have a daily capacity of 500 barrels. The capital stock is \$60,000.

A foreign exchange gives the following bit of milling history in this country: "Much of the flour made in Ohio before 1840 was sent West. In 1836 Oliver Newberry purchased 500 barrels at \$8 per barrel, and took it to Chicago, then a struggling frontier village, and sold it at \$20 per barrel, citizens holding a public meeting and thanking him for not asking \$50. It was all the flour the people of Chicago had for the winter."

Wm. McGill's old Ring grist-mill, Greenbush, N. Y., burned; loss \$15,000.

The March report of the Department of Agriculture presents the following table showing the average export prices of wheat for a series of years:

Years.	Average Price.	Years.	Average Price.	Years.	Average Price.
1874-5.....	\$1.12	1879 80.....	\$1.24	1884-5.....	.862
1875-6.....	1.24	1880-1.....	1.11	1885-6.....	.870
1876-7.....	1.17	1881-2.....	1.19	1886-7.....	.890
1877-8.....	1.34	1882-3.....	1.13	1887-8.....	.853
1878-9.....	1.07	1883-4.....	1.07	1888-9.....	.897

#### BOOKS AND PAMPHLETS.

The busy housewife will find in *Good Housekeeping* for March 29 various helpful and suggestive things, from Miss Parloa's pleasant article on "Going to Market" to "Josephine's" appropriate words regarding the "Care of the Canary." "The Domestic Juggernaut" tells the story of too many a human sacrifice, and if heeded might well be read by many a "lord of creation." The pages of this most valuable periodical for the home are filled with good things, including several pages of excellent original poetry, with some choice selections in addition.

The prospect is that the exploration and conquest of Africa will be the absorbing problem of the twentieth century. Already nearly every nation has its Stanley. France has hers in the person of M. Trivier, whom she prefers, however, to call her Livingstone. An article on this "French Livingstone" by Henry Fouquier has the post of honor in *The Transatlantic* of April 1. Caliban (Emile Bergerat) mercilessly ridicules the anti-Jewish crusade, Enrico Pauzacchi critically sketches the Decadent school of writers, and there are extracts from the new volume of Edmond de Goncourt's *Memoirs*, accounts of novels by Zola and Tolstoi, and an interview with Louis Michel regarding her operetta, "In the Moon." The novelette, "Totor's Drum," is by Jean Richepin, known in France as the Rabelais, and the portrait of this author on the cover is perhaps the most striking of the series of admirable pictures which *The Transatlantic* is giving its readers. The music of the number fits the season, and so does the poetry, the former being an Easter mass, "O Salutaris," written by Samuel Rousseau, and the latter a delightful translation of Arno Holz's "The Heart of the Spring." 328 Washington Street, Boston. \$2.00 per year.

The *Century* for April is remarkable for the variety of its contents. Two of Mr. Cole's charming artistic engravings accompany a paper on Giovanni Bellini, by Mr. W. J. Stillman, in the series on Italian Old Masters. Mr. Jefferson's Autobiography reaches the Rip Van Winkle stage of his career. Three timely articles are "The Latest Siberian Tragedy," by George Kennan; "Suggestions for the Next World's Fair," by George Berger, Director of the French Exposition; and "The Slave-Trade in the Congo Basin," by E. J. Glave, one of Stanley's pioneer officers. Three articles of special interest and authoritativeness are "An Artist's Letters from Japan," by John La Farge; "The Serpent Mound of Ohio," by Prof. F. W. Putnam, of the Peabody Museum, Cambridge, Mass.; "The Old Poetic Guild in Ireland," a special study by Charles de Kay. There are three short stories, giving altogether much variety in subject matter and treatment—"The Herr Maestro," by Elizabeth Robbins Pennell, "That Yank from New York," a story of Mexico, by John Heard, jr., and a "A Dusky Genius," a story of the South, by Maurice Thompson. Mrs Barr's novel, "Friend Olivia," reaches the sixth part. The central West comes in for attention in "The Non-Irrigable Lands of the Arid Region," by Major Powell, Director of the U. S. Geological Survey; and "The Shoshone Falls," by Captain John Codman. There is a short literary essay by Col. T. W. Higginson and a curious special account from Captain Charles Bryant of his experience "In the Fur-Seal Islands," Alaska. An article in the series of Present-Day Papers is contributed by Professor Richard T. Ely, under the title of "A Programme for Labor Reform." There remains to be considered the poetry, which is furnished by Celia Thaxter, Frank Dempster Sherman, Charles G. D. Roberts, Margaret Crosby, Ellen Burroughs, Helen Gray Cone, James Whitcomb Riley, Lizette Woodworth Reese, Aubrey de Vere (on Robert Browning), Katharine Lee Bates, and, in a lighter vein, by DeWitt C. Lockwood, William Page Carter, Orelia Key Bell, and Brainerd Prescott Emery.

#### CATARRH.

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Sufferers are not generally aware that these diseases are contagious, or that they are due to the presence of living parasites in the lining membrane of the nose and eustachian tubes. Microscopic research, however, has proved this to be a fact, and the result of this discovery is that a simple remedy has been formulated whereby catarrh, catarrhal deafness and hay fever are permanently cured in from one to three simple applications made at home by the patient once in two weeks.

N. B.—This treatment is not a snuff or an ointment; both have been discarded by reputable physicians as injurious. A pamphlet explaining this new treatment is sent free on receipt of stamp to pay postage, by A. H. Dixon & Son, 337 and 339 West King street, Toronto, Canada.—*Christian Advocate*.

Sufferers from Catarrhal troubles should carefully read the above.



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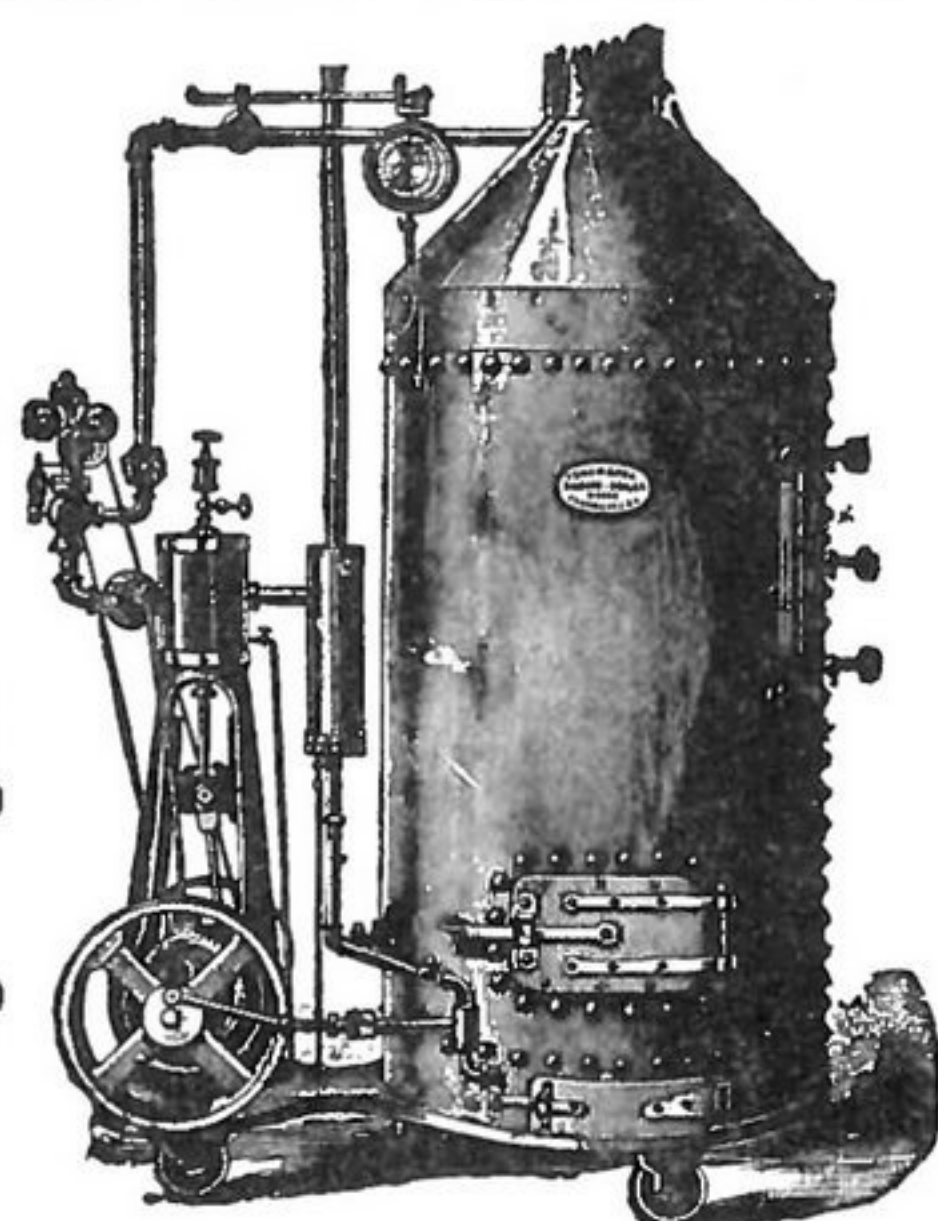
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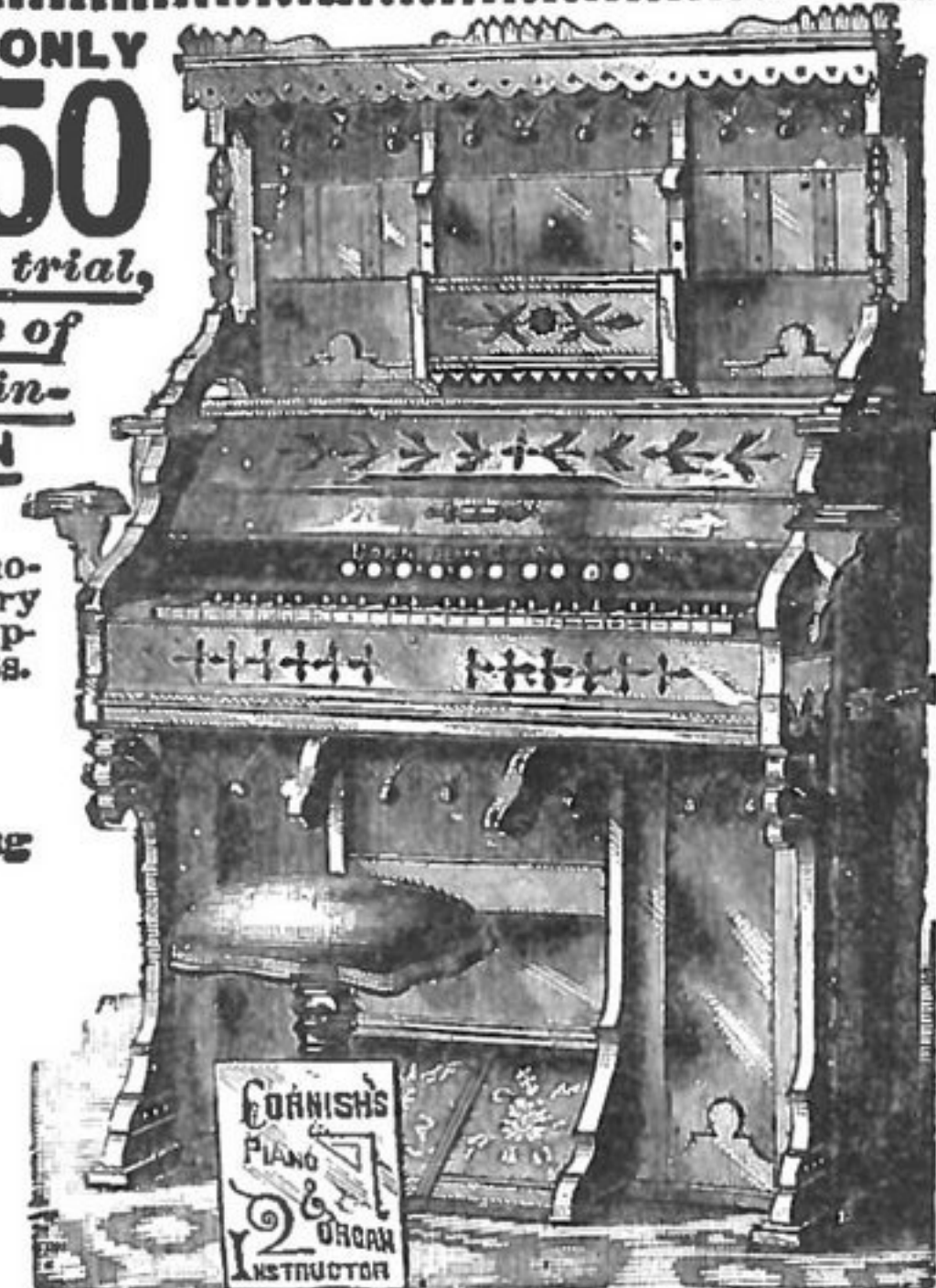
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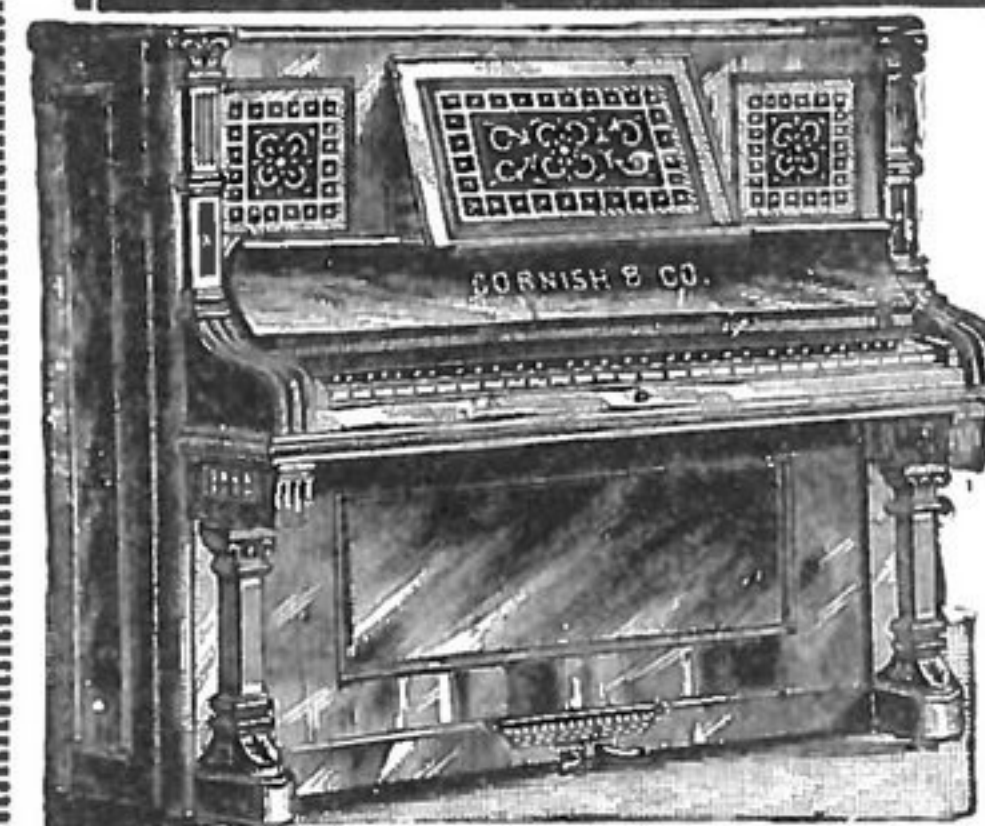
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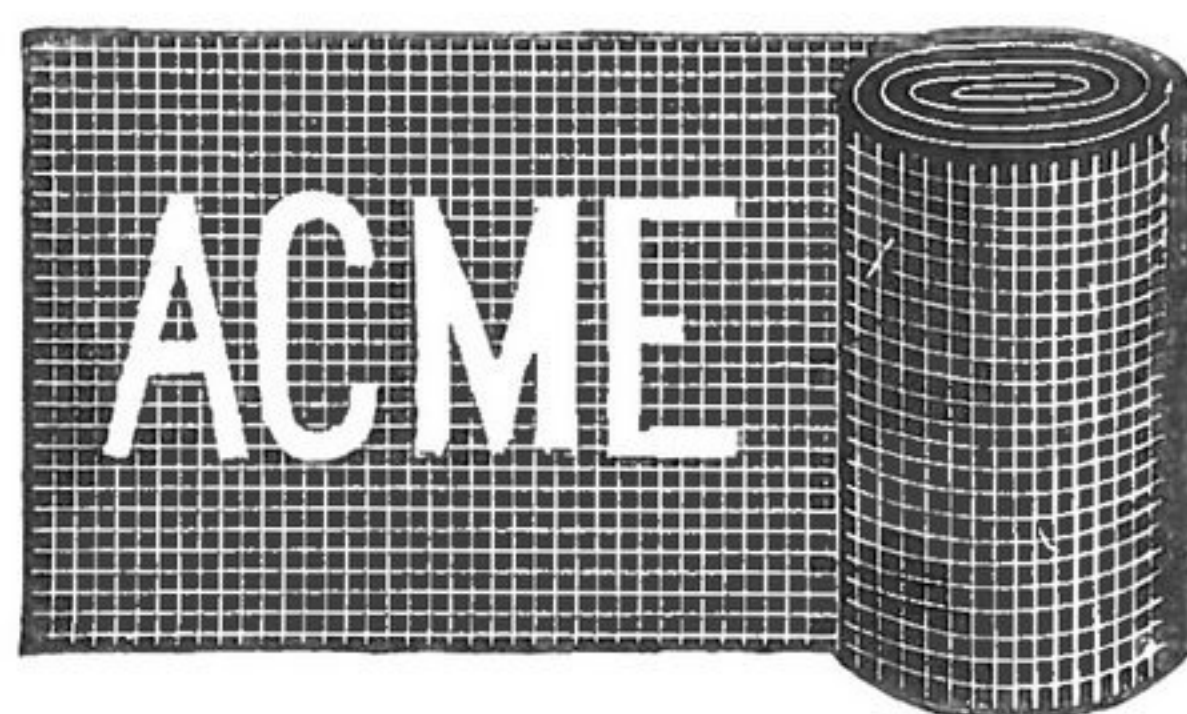
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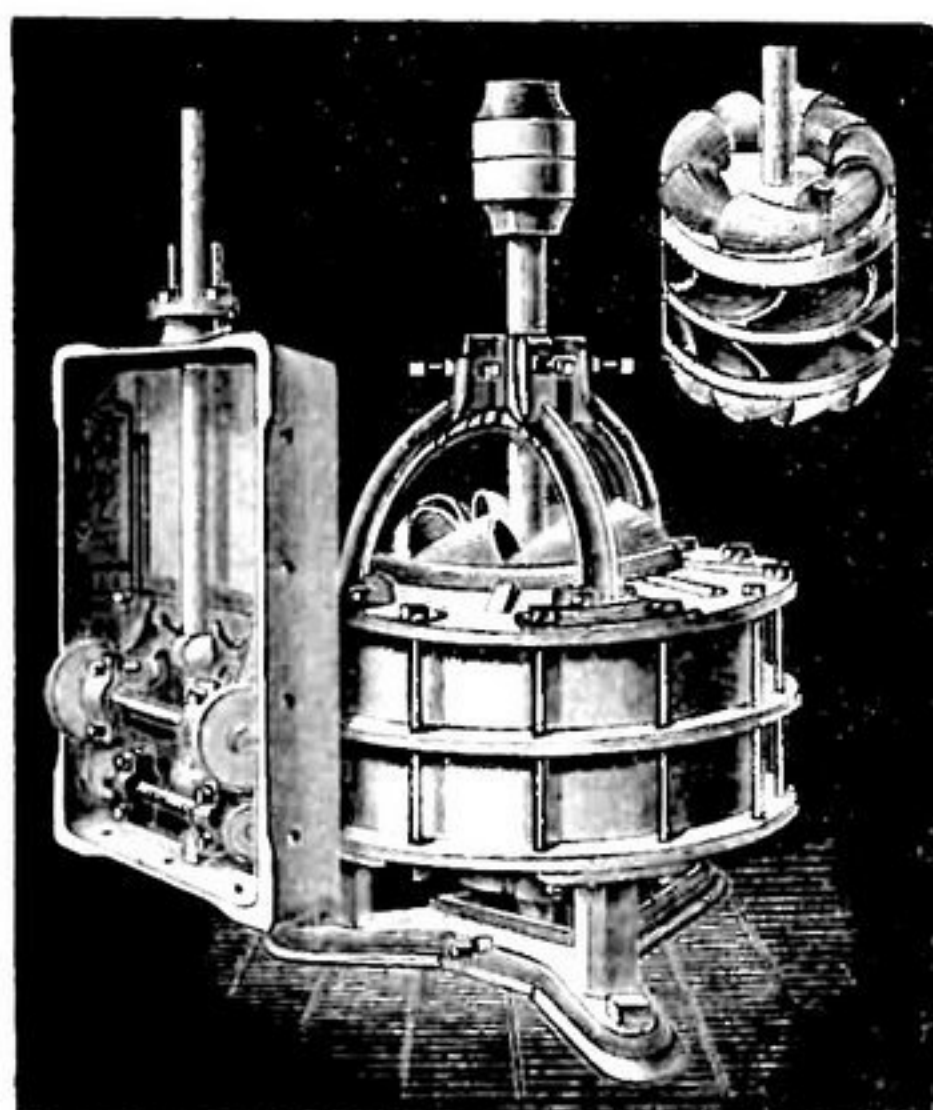
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## EUROPEAN ECHOES.

EUROPEAN wheat importing countries have imported, during the period between August 5 and March 17, in the past three years, the following quantities of wheat, the three principal sources of supply being given:

	1889-90.	1888-89.	1887-88.	Total.
	Bushels.	Bushels.	Bushels.	Bushel.
United States.....	60,832,000	44,808,000	72,640,000	178,280,000
Russia.....	51,288,000	69,240,000	58,560,000	179,088,000
India.....	15,728,000	16,936,000	6,416,000	39,080,000

ENGLISH millers are seriously troubled by the flour-moth in their mills. Miss Ormerod, the naturalist, recommends the use of steam in infested mills to drive out the pest. A correspondent who used steam writes to Miss Ormerod; "The way I applied the steam was by carrying about 40 yards of half-inch piping into the mill from the boilers, and attaching an India-rubber bore to it for the men to work about on the walls, floors, spouts and machines, blowing the steam into all crevices and holes. After blowing the steam I set the men to wash the walls, and everywhere they could without fear of affecting the flour, with paraffin. The machines inside I had washed with a strong solution of boiling water and soda. Strong soda and water I find effectual in destroying the maggots when it can be got on them."

### COTEMPORARY COMMENT.

As there is no large surplus of wheat in Canada, the proposed duty of 20 cents a bushel on that grain and half a cent per pound on flour will have no effect at present except in certain localities in the Northwest. If these high duties are maintained when the Canadian Northwest grows many millions of bushels for export, the exclusive policy of the United States will extend our milling trade and our grain shipping business in the direction of England, which will be more than ever our chief customer.—*Montreal "Canadian Journal of Commerce."*

### WHY WHITE BREAD IS THE BEST.

Professor William Jago, the eminent British chemist and scientific bread-maker, says: "The principal controversy has been as to whether or not the bran should be removed from the wheat during the operation of milling, or, in other words, whether white or brown bread is the more valuable article of food. The Bread Reform League argue that the thin outer coating of the bran, which is largely silicious, should be removed from the wheat, and that the whole of the remainder should be ground down together into flour or meal. Their principal arguments are based on the fact that bran is both rich in nitrogenous constituents and in phosphates, and that it is, therefore, advantageous that these substances should find their way into the body. So energetic have the members of this League been in their advocacy of their opinions that they have got a number of people actually to believe them. You, all of you, know the manner in which the lover of a good glass of wine expresses himself when he regretfully says he knows it is not good for him, but at the same time pleads that he so thoroughly likes and enjoys it. Well, I now get to hear the same kind of sentiment about bread; as the bread-dish is passed at a meal, one or another turns around and remarks that he knows that scientific men are unanimously against him, and that as a stern matter of duty he ought to eat whole meal bread, but he does so much prefer the white loaf. As one of those who are believers in the white loaf, I have frequently caused astonishment by denying that whole-meal bread has greater claims than white, either on the score of nutritive value or purity.

"I propose laying before you the reasons which cause me to hold this opinion. The first consideration of nutritive value will depend on the chemical composition of whole meal and flour. For purposes of comparison it is evident that whole meal and flour from one and the same wheat should be considered. One of the most complete and exhaustive researches on this subject that has yet been made is that by Clifford Richardson, Chemist to the Agricultural Department

of the United States Government. The most convenient English book to which I can refer you for the figures I am about to give is my own work on the 'Chemistry of Wheat, Flour and Bread and Technology of Bread-making,' in which, on page 268 and following, they are quoted in full. The samples were collected at Messrs. 'Pillsbury's mill' at Minneapolis, where a straight run of spring American wheat is used. The following are some of the constituents of the wheat and the furnished flours:

	Albuminoids.	Carbohydrates.	Phosphoric Acid.
"Wheat or whole meal....	14.35	70.37	0.82
Bakers' flour.....	14.88	69.99	0.31
Patent flour.....	12.95	73.45	0.18
Straight grade flour....	14.49	70.70	0.28

"It should be explained that modern millers divide their flour into two or more varieties; the patent flour is the whitest made and is usually collected separately for the manufacture of pastry and fancy bread. About one part of patent to four parts of bakers' flour is the usual proportion. When these are mixed, a straight grade is produced. It will be seen that the straight-grade flour is really the whole of that produced from the wheat. The bakers' flour is that which is commonly employed for bread-making; it will be noticed that it is richer, both in albuminoids and phosphates, than is the straight grade. For purposes of comparison it will be fairer to compare the whole meal with the straight-grade flour. The straight grade flour contains 14.49 per cent. of albuminoids, against a percentage of 14.35 in the whole meal. This is not a great difference, but what difference there is is on the side of the flour.

"In carbohydrates, consisting principally of starch, the straight-grade flour has also a slight advantage, containing 70.70, against 70.37 in the whole meal. In the matter, therefore, of proteids or flesh-formers and carbohydrates or heat-producers, the flour contains more nutriment, per cent., than the wheat from which it was obtained. Professor Church advocates that in an ideal food the proteids and carbohydrates should be present in the ratio of 1 to from 4 to 5, and says that in flour the proportion is only 1 to 7½ or 8. In his data Professor Church is mistaken; the wheat before us gives the ratio of 1 to 4.89, and the flour 1 to 4.88. The flour and wheat are almost alike in ratio; but again, what infinitesimal advantage there is is in favor of the flour. So far there is absolute proof of the superior nutritive value of flour, weight for weight. In the matter of phosphoric acid, the wheat contains nearly three times the quantity of that present in the flour; so far, therefore as actual chemical composition is concerned, the wheat is much richer in phosphates. To this point further reference must be made.

"Another argument is that 100 pounds of wheat yield 100 pounds of wheat meal, but only about 70 to 75 pounds of flour, hence a considerable waste of food stuff. This would apply if bran and other offals were absolutely wasted, but as a matter of fact food has to be provided for cattle, and bran and wheat offals generally form exceedingly valuable food for ruminating animals, whose digestive organs are specially adapted for the assimilation of substances of this description. There is no doubt that cattle live and thrive on bran as an article of diet, but can the same be said of human beings? One undoubted effect of its administration in excess is to cause diarrhoea, while in lesser quantities, through undue hastening of peristaltic action, it causes the ejection of food from the body before the whole of its nutritive constituents has been absorbed.

"On the advisability of prescribing bran as an aperient I say nothing, for the reason that medicine lies outside my province as a chemist; but I am in a position to state this, that a perfectly healthy condition of the functions of the bowels may exist where white bread alone is eaten. We will simply add that the claims, made for flours made by some special process (always secret) by which all the nutriment is retained and everything else rejected, are fallacious. In point of nutritive value they are all inferior to the flours sold on the general market. Not only the outside bran, but the inside-bran as well, should be rejected in milling in order to secure a good, nutritive loaf."



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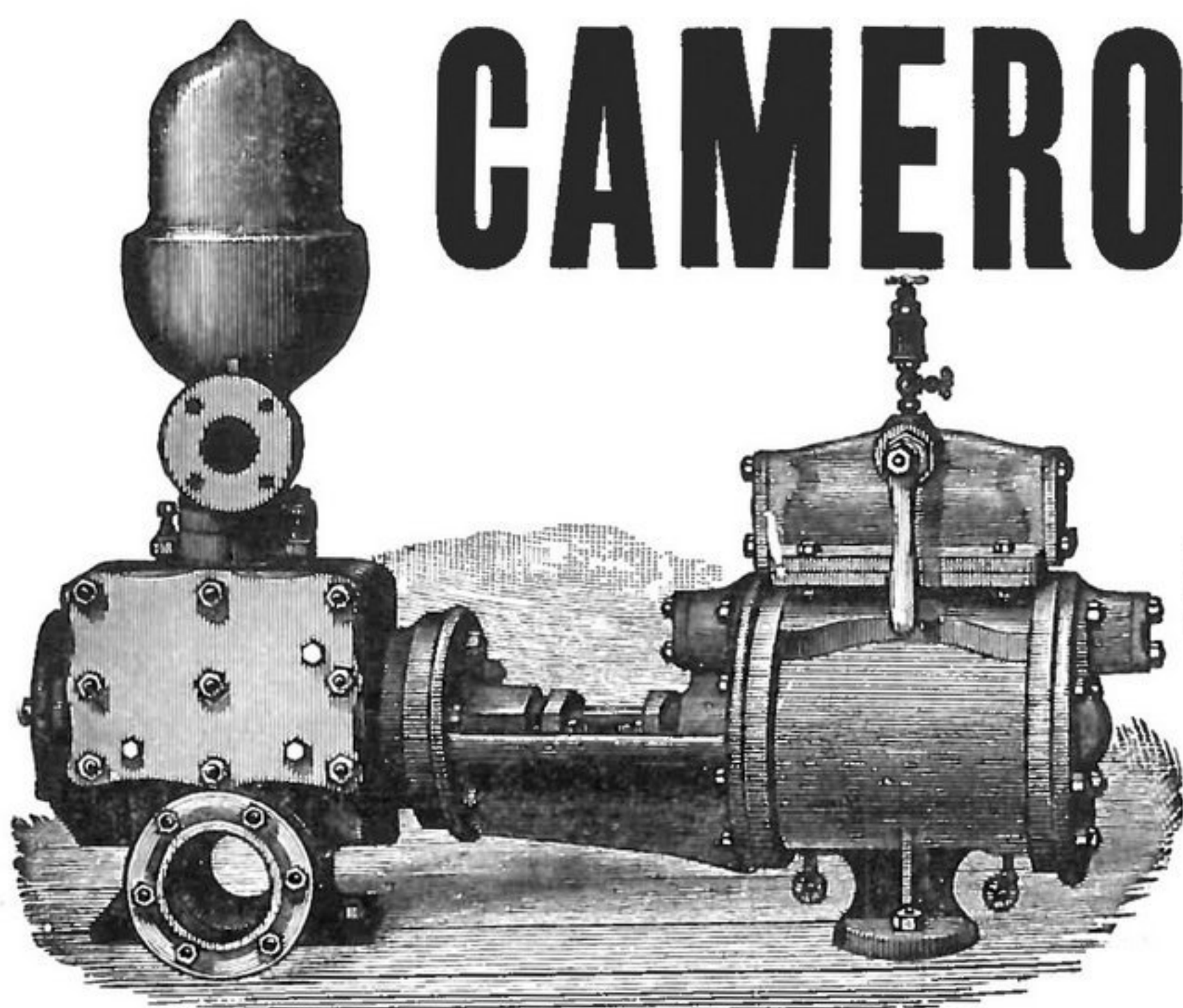
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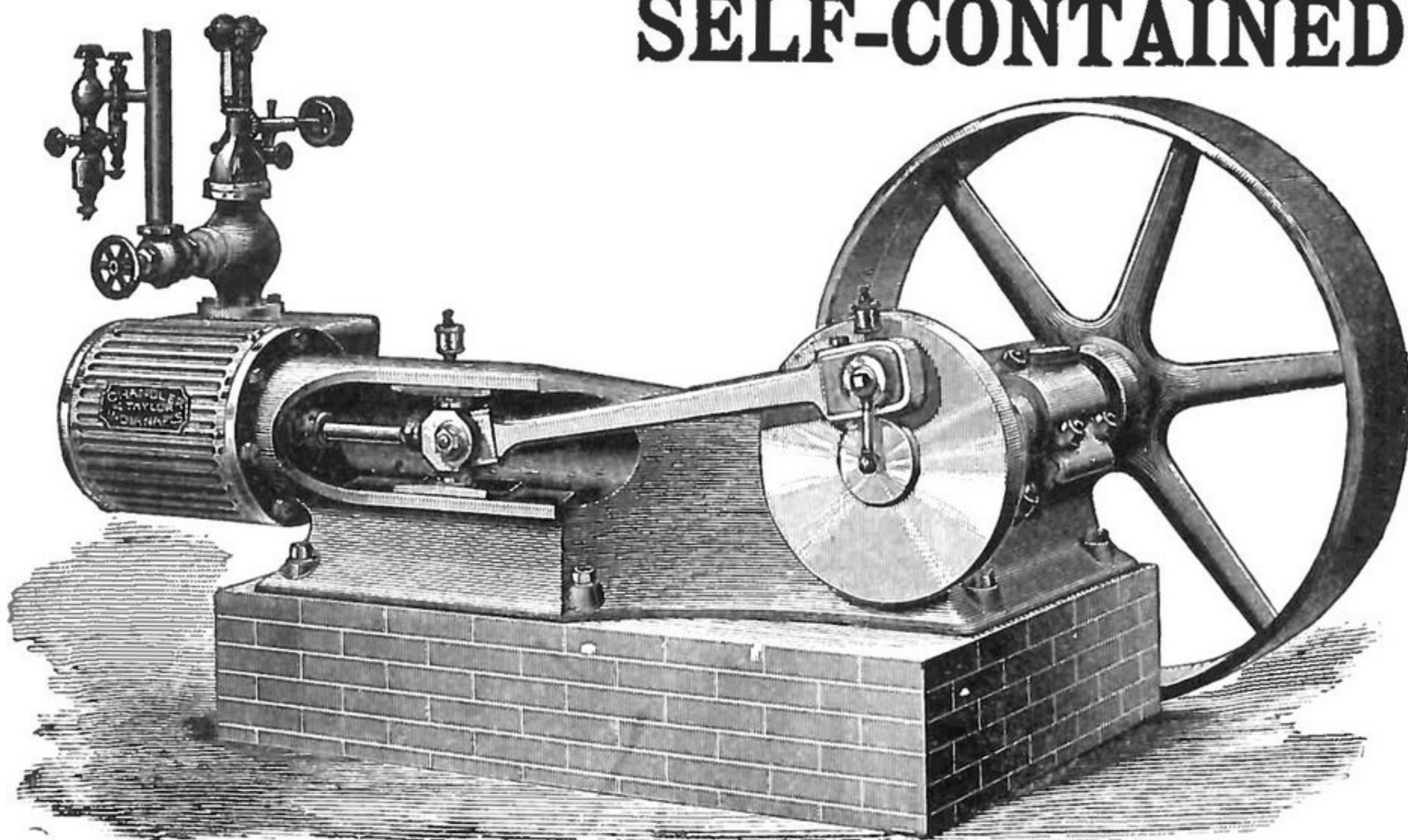
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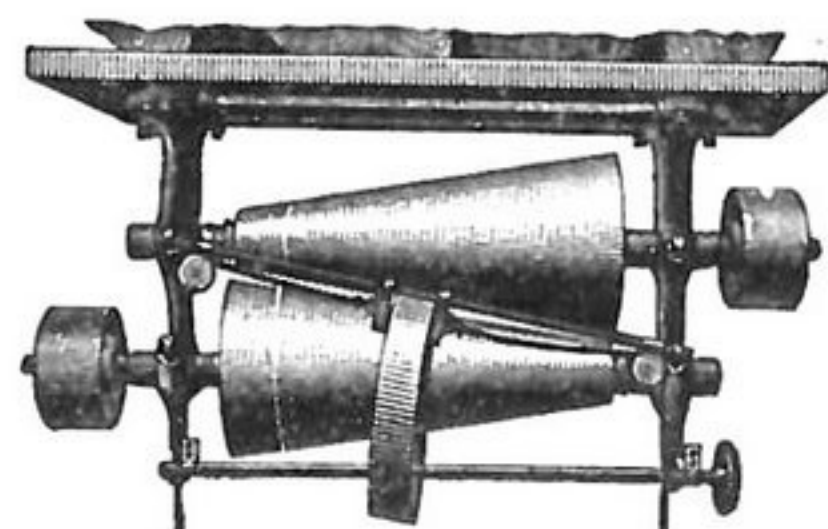
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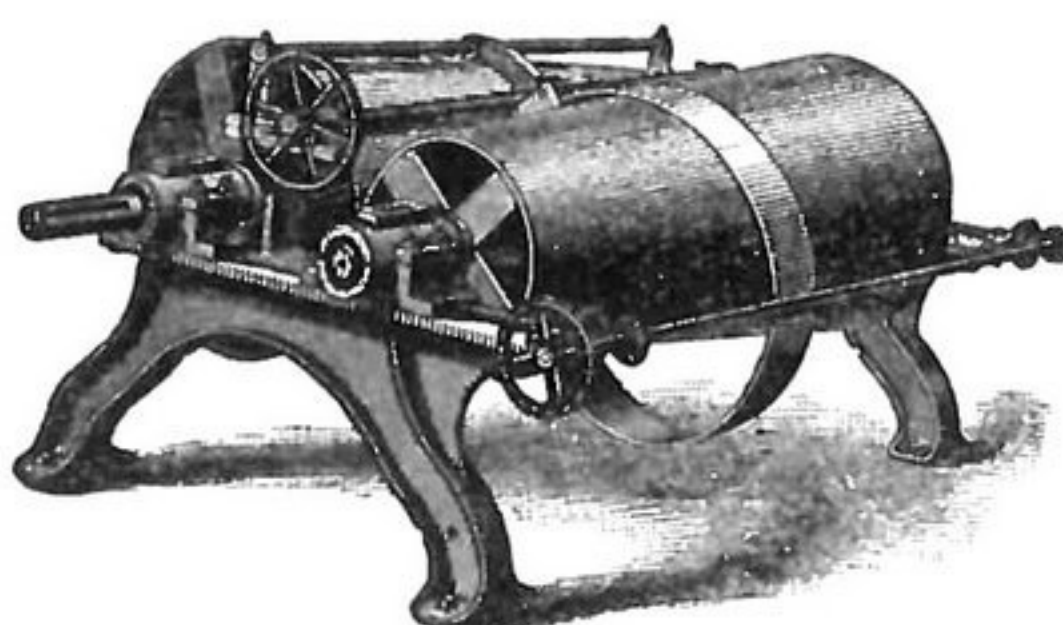
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OFFICE OF THE MILLING WORLD,  
BUFFALO, N. Y., April 5, 1890.

Friday of last week was a day of dull, featureless and unchanged markets. March wheat closed in New York at 86 $\frac{1}{2}$ c., with Atlantic port receipts 63,653, exports 138,800, and options 1,100,000 bushels. March corn closed at 36 $\frac{1}{2}$ c., with receipts 362,328, exports 459,238, and options 376,000 bushels. March oats closed at 28 $\frac{1}{2}$ c., with receipts 156,960, exports 51,163, and options 750,000 bushels. Wheat flour was dull in the extreme, with receipts 9,084 sacks and 21,179 barrels, and exports 15,927 sacks and 32,462 barrels. The minor lines were featureless.

Saturday was a day of dull, steady and featureless markets. March wheat closed at 87c., with receipts 31,350, exports 20,276, and options 700,000 bushels. March corn closed at 36 $\frac{1}{4}$ c., with receipts 357,688 and exports 208,769 bushels. March oats closed at 29c., with receipts 132,591 and exports 15,449 bushels. Wheat flour was chronically dull. Receipts were 18,892 sacks and 23,577 barrels, and exports 2,850 sacks and 14,812 barrels. The minor lines were featureless.

Monday brought generally dull and unsettled markets. April wheat opened at 86 $\frac{1}{2}$ c. and closed at 86 $\frac{3}{4}$ c., just  $\frac{1}{4}$ c. below the closing price a year ago. Receipts were 19,836, exports 69,195, and options 1,100,000 bushels. April corn closed at 36 $\frac{3}{4}$ c., or  $\frac{1}{4}$ c. below the figure of last year. Receipts were 501,860, exports 520,127, and options 1,600,000 bushels. April oats closed at 28 $\frac{1}{2}$ c., or  $\frac{1}{2}$ c. below the figure a year ago. Receipts were 142,750, exports 158,500, and options 350,000 bushels. Wheat flour was dull and in buyers' favor, excepting No. 2 and superfine, which were wanted for export. Receipts included 16,947 sacks and 26,361 barrels, and exports 12,830 sacks and 31,462 barrels. The minor lines were featureless. The visible supply in the United States and Canada was:

	1890. Mch. 29.	1889. Mch. 30.	1888. Mch. 31.
Wheat.....	27,114,093	29,439,231	34,384,476
Corn.....	20,204,686	16,831,835	9,165,142
Oats.....	4,537,005	7,187,768	4,145,661
Rye.....	1,405,289	1,547,880	334,532
Barley.....	1,351,057	1,348,144	1,777,566

Tuesday brought lower and fairly active wheat markets, on lower cables and larger visible supplies in the United Kingdom. April wheat closed at 86 $\frac{3}{4}$ c., against 86 $\frac{1}{2}$ c. on April 1, 1889. Receipts were 26,752, exports 97,576, and options 3,360,000 bushels. April corn closed firmer and active at 37 $\frac{1}{2}$ c., against 43c. a year ago. Receipts were 599,835, exports 624,100, and options 1,120,000 bushels. April oats closed at 28 $\frac{3}{4}$ c., against 31c. a year ago. Receipts were 177,725, exports 45,333, and options 30,000 bushels. Wheat flour was dull and in buyers' favor, though not quotably lower. Sales were made at the close at 5@10c. off on patents and 5c. on medium grades. The New York stocks of flour on April 1 were 90,690 barrels of winter and 100,850 barrels of spring, a total of 191,540 barrels, against 230,500 barrels on March 1, and 262,430 barrels a year ago. The minor lines were all unchanged and featureless.

The following shows the amount of wheat and flour, together with the amount of corn on passage to United Kingdom, for ports of call or direct ports for the weeks mentioned:

	1890. April 1.	1889. April 2.
Wheat and flour, qrs....	2,657,000	1,891,000
Corn, qrs.....	568,000	331,000

The following shows the amount of wheat and corn on passage to the Continent for the past week and for the same week last year:

	1890. April 1.	1889. April 2.
Wheat, qrs.....	669,000	356,000
Corn, qrs.....	511,000	233,000

	Qrs.
Shipments India wheat to U. K. ....	25,000
do do Continent..	2,500

The imports into the United Kingdom for the past week and for the same weeks in previous years were as follows:

	1890. April 1.	1890. Mch. 25.	1889. April 2.
Wheat, qrs .....	174,000	209,000	127,000
Corn, qrs.....	227,000	276,000	206,000
Flour, bbls.....	149,000	314,000	176,000

Wednesday brought a flurry of activity and excitement in wheat, and higher prices all along the line, on lighter western receipts and a stampede by shorts. April wheat closed at 86c., with receipts 46,822, export 76,275, and options 7,000,000 bushels. The strength was on bad crop reports from all the winter-wheat States. April corn closed at 38c., with receipts 386,610, exports 147,412, and options 4,816,000 bushels. April oats closed at 28 $\frac{1}{2}$ c., with receipts 117,165, exports 8,098, and options 600,000 bushels. Wheat flour ruled unchanged, with receipts 11,899 sacks and 22,860 barrels, and exports 9,234 sacks and 14,617 barrels. The minor lines were featureless.

Thursday brought no material change in the markets. April wheat closed at 87 $\frac{1}{4}$ c., with receipts 9,600, exports 7,993, spot sales 33,000, and options 6,220,000 bushels. April corn closed at 38c., with receipts 28,600, exports 135,481, spot sales 173,000, and options 3,960,000 bushels. April oats closed at 28 $\frac{1}{2}$ c., with receipts 112,000, spot sales 141,000, and options 390,000 bushels. Rye grain was firm at 57 $\frac{1}{2}$ @58 $\frac{1}{2}$ c. for State. Barley was strong at unchanged rates. Malt was quiet at 62 $\frac{1}{2}$ @72 $\frac{1}{2}$ c. for 2-rowed State, at 72 $\frac{1}{2}$ @87c. for 6-rowed, and 75@78 $\frac{1}{4}$ c. for Canada.

Wheat flour was dull and heavy. Receipts were 16,000 and sales 15,000 packages. The following are the quotations: Low extras \$2.15@2.65; city mills \$4.25@4.45; city mills patents \$4.75@5.15; winter wheat low grades \$2.15@2.65; fair to fancy \$2.85@4.50; patents \$4.35@5.00; Minnesota clear \$3.35@4.20; Minnesota straights \$3.85@4.65; Minnesota patents \$4.50@5.25; Minnesota rye mixtures \$3.35@3.90; superfine \$2.10@2.50.

Rye flour was firm at \$2.75@3.25. Corn-meal was quiet at \$2.25@2.45. Mill-feed was steady at 72 $\frac{1}{2}$ @77 $\frac{1}{2}$ c. for bran, 87 $\frac{1}{2}$ @92 $\frac{1}{2}$ c. for middlings, and 72 $\frac{1}{2}$ @75c. for rye feed. The Minneapolis output of flour the past week was 137,450 barrels, and the present week is reduced. The output has been far larger than the sales.

#### BUFFALO MARKETS.

WHEAT—Prices remain very firm here. Sales were made to-day of No. 1 hard at 93c., No. 1 Northern at 91 $\frac{1}{2}$ @92c., and No. 2 Northern is held at 89 $\frac{1}{2}$ c. Several cars of No. 2 red were sold at 85 $\frac{1}{2}$ c. and some long berry at 86 $\frac{1}{2}$ c. No. 2 white is held at 87 $\frac{1}{2}$ c. CORN—The market remains very firm here. No. 3 yellow is held at 36 $\frac{1}{2}$ c. and No. 4 do at 35 $\frac{1}{2}$ @35 $\frac{3}{4}$ c. No. 3 corn sold at 35 $\frac{1}{4}$ c., several cars going at that, and No. 4 sold at 34 $\frac{1}{4}$ c., and some is held at 35c. OATS—The market is steady; No. 2 white selling at 29 $\frac{1}{2}$ @29 $\frac{1}{4}$ c., No. 3 white at 28 $\frac{1}{2}$ c., and No. 2 mixed at 27 $\frac{1}{4}$ c. Holders are firm at these quotations. RYE—Quotations remain at 50c for No. 2, but few sales are made. BARLEY—There is some inquiry, but few sales are reported. No. 1 Canada is quoted at 63@65c. No. 2 at 58@60c. No. 3 at 52@54c., and Western at 40@46c. OATMEAL—Akron, \$6.00; Western, \$5.75 per bbl.; rolled oats, in cases, 72 lbs., \$3.25. CORNMEAL—Coarse, 80@85c.; fine, 85@90c.; granulated, \$1.50 per cwt. MILLFEED—City-ground coarse winter, \$13.50@14.00 per ton; fine do. \$14.50@15.50; finished winter middlings, \$15.00@15.50; coarse spring do, \$13.00@13.50.

#### FLOUR MARKET.

Spring Wheat.	Winter Wheat.
Patents..... \$5.50@6.00	Patents ... \$4.75@5.25
Straight..... 4.50@5.00	Straight..... 4.25@4.75
Bakers..... 3.50@4.00	Clear .... 3.75@4.25
Red Dog.... 2.25@2.75	Low grades.. 2.50@3.00

Retail prices 50c per bbl above these quotations. Buckwheat flour \$1.40@1.75 per 100 lbs.

#### THE GREAT SHRINKAGE OF CORN.

An Iowa corn-grower writing from Marshalltown, gives an account of several experiments with last year's corn, which he made to deter-

mine the amount of shrinkage. The question of shrinkage is one that has been discussed considerably, and many experiments have been made, but still there is a difference of opinion. It is claimed by some that 100 bushels of corn on the ear, as it comes from the field in November, will shrink to about 80 in 6 months. So that 40 cents a bushel for corn in the ear, as it comes from the field, is as good as 50 cents 6 months afterward, shrinkage only being taken into account. In the experiments with last year's corn which were conducted at Marshalltown, the corn was put in sacks and hung up in the carriage room of a barn. On October 23 forty pounds were taken from a feed store and hung up. On November 26 it weighed 37 pounds, and on December 21 it weighed 37 pounds. On March 18 it weighed 35 $\frac{1}{4}$  pounds. On May 31 it had shrunk to about 34 pounds, and on August 3 it weighed 33 $\frac{1}{2}$  pounds. In a little over 7 months, or by May 31, it had shrunk 6 pounds, a loss of just 15 per cent. in weight. In another experiment 37 $\frac{1}{2}$  pounds were picked from the field on November 10 and stored in exactly the same manner as the other. The first 16 days it shrank 1 $\frac{1}{4}$  pounds, and by December 21 it had shrunk no more, but on March 18 it only weighed 35 $\frac{1}{4}$  pounds. On May 31 it weighed 33 $\frac{1}{2}$  pounds, as did it also upon August 3, not having shrunk any during June and July. In this case the shrinkage was only 4 pounds, or 10 $\frac{1}{2}$  per cent. of the original amounts. The varieties experimented with were yellow dent, above medium size. The same day the 37 $\frac{1}{2}$  pounds were taken, 4 ears were picked and hung up by the shucks. The weight was 74 ounces. These shrunk to 60 ounces in two months, the most of it the first month. This corn being exposed to the air shrank more rapidly and consequently suffered greater loss. In these experiment not a grain was lost, so when they are compared with the shrinkage in the crib a wide difference will have to be canceled.

#### WHY CORN POPS.

Says a recent writer on the science of popping corn: In what condition is the starchy interior of the grain just before it explodes? The common experience of the kitchen and laundry will help us here. In making up the mixture for stiffening clothes, the laundress puts starch into water and boils it, and we all know that in this process the starch loses its powdery character and becomes blended with the water into a pasty, translucent mass. The effect upon the individual starch granule is a softening and considerable increase of its bulk and finally its rupture and diffusion through the water. While we can not see the inside of the grain at the critical moment when it has all but burst, we may, in view of what we now know, surmise the truth. Is it not very likely that, as the grain gets hotter and hotter, the moisture present in the cells, or in the starch-granules themselves, softens them first and then, when the heat becomes too great to permit it to remain in the fluid state, it suddenly turns to steam, and the now plastic starch expands in every direction, forming little vesicles, losing at the same time, of course, the moisture and thus becoming firm and brittle again?

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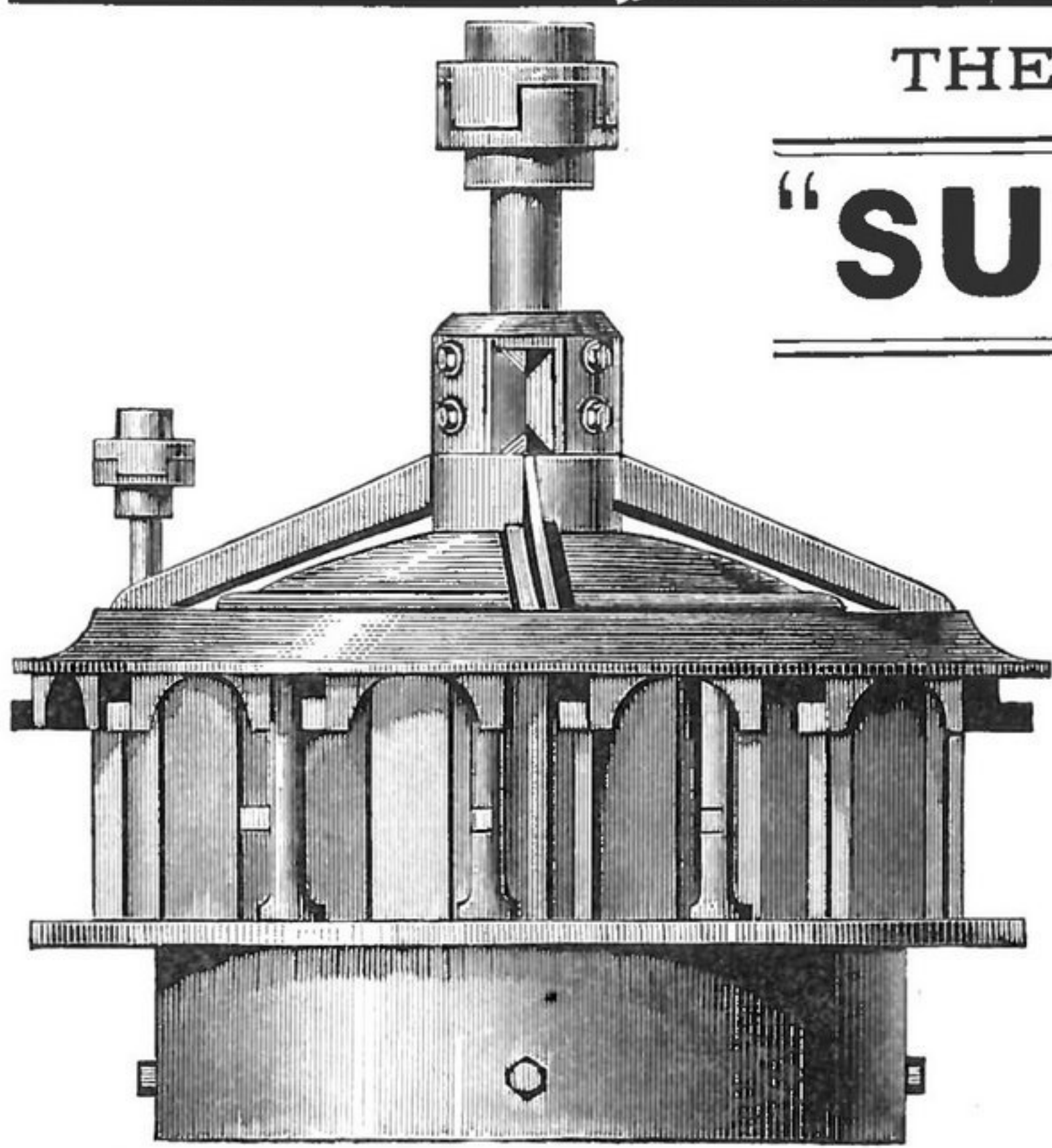
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10 " .....	52c

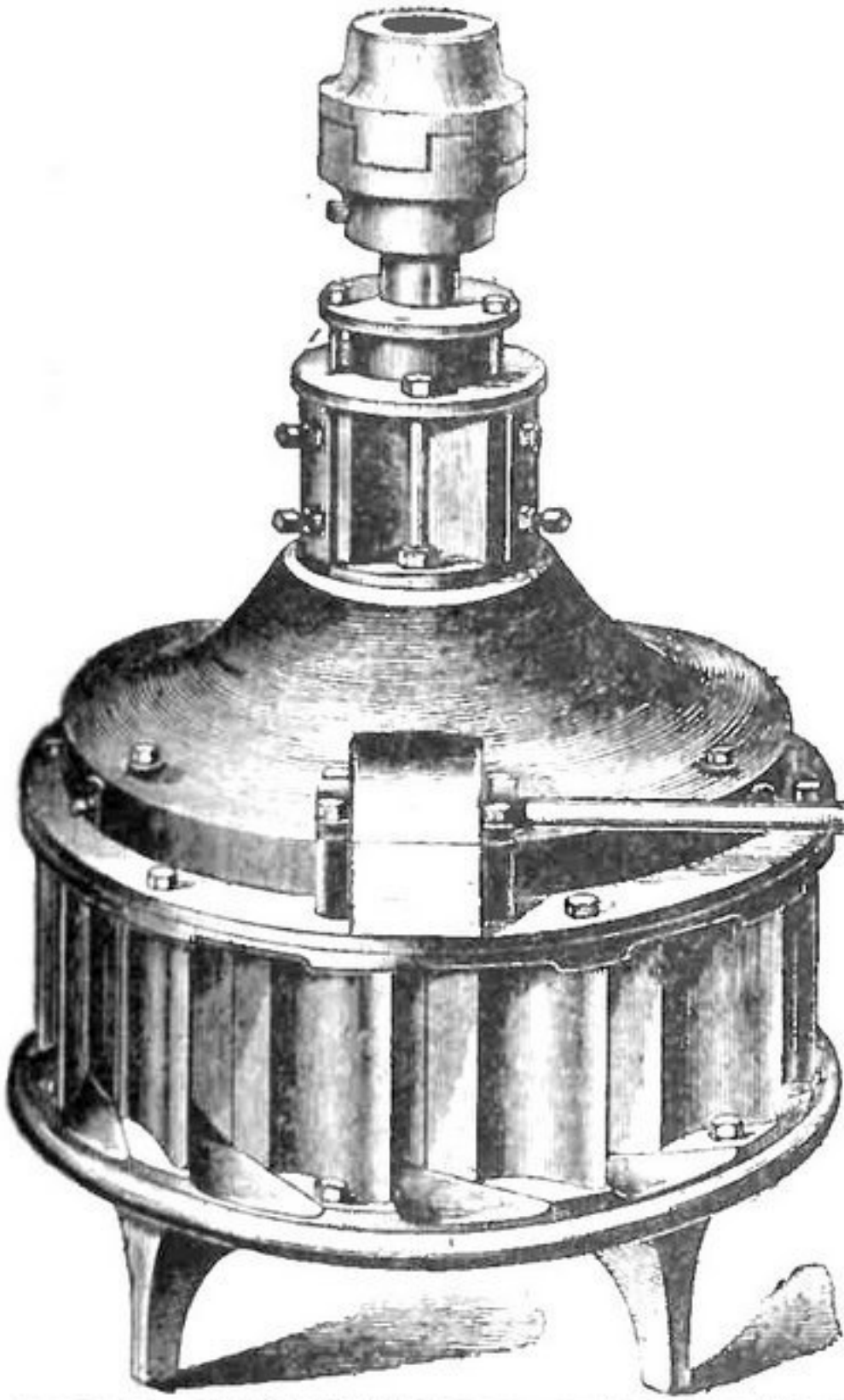
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8 " .....	28c
10 " .....	36c

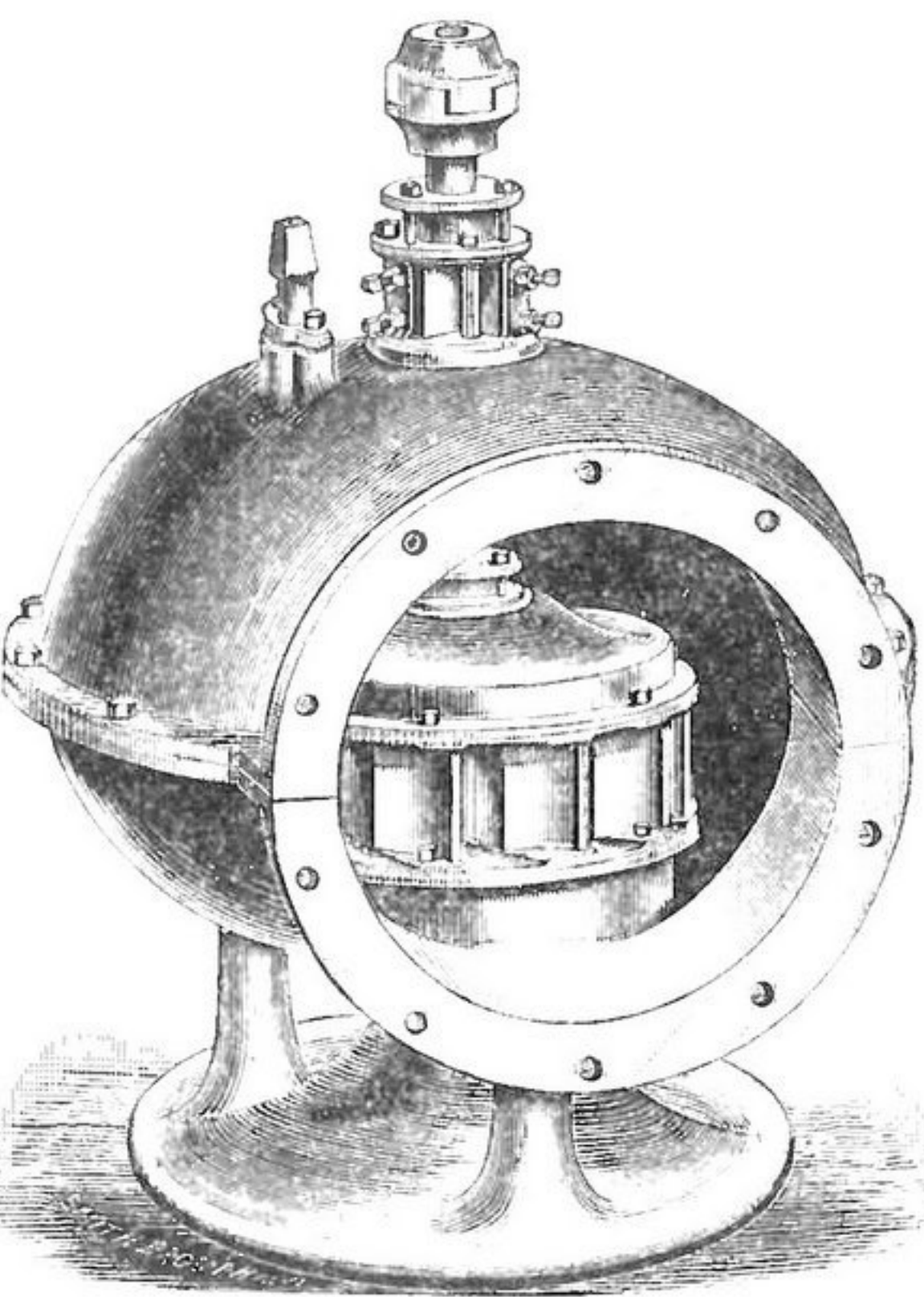
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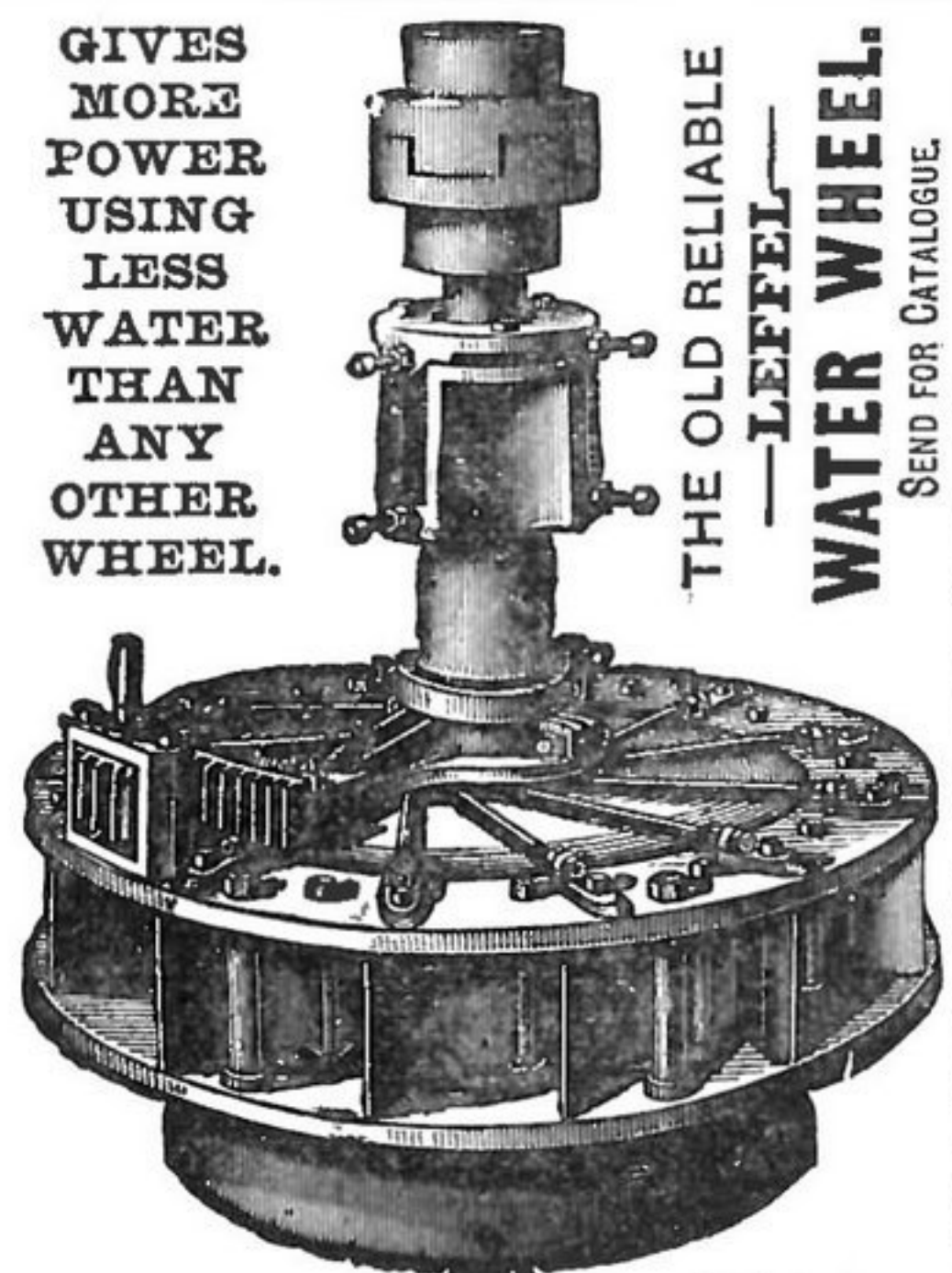
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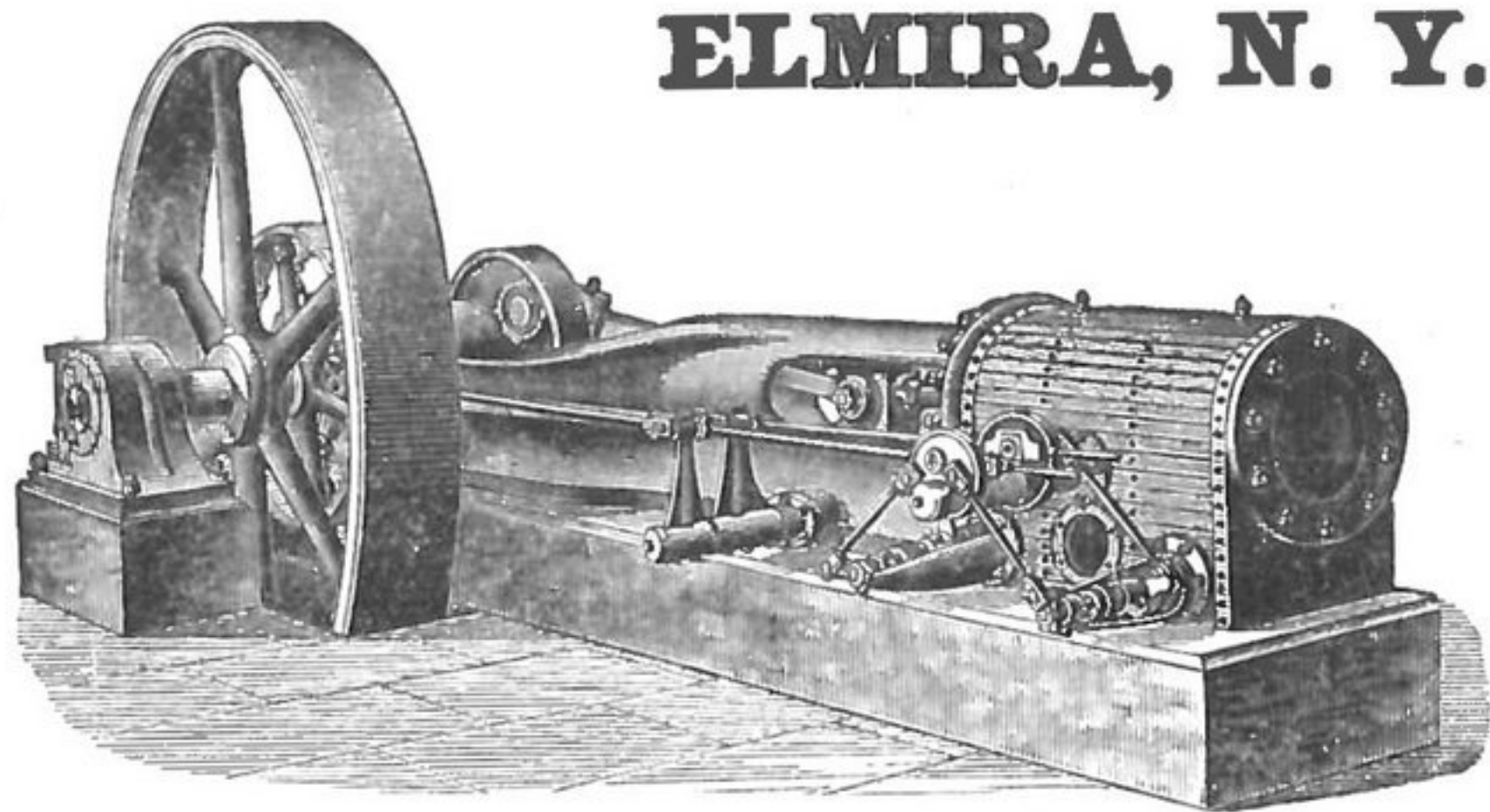
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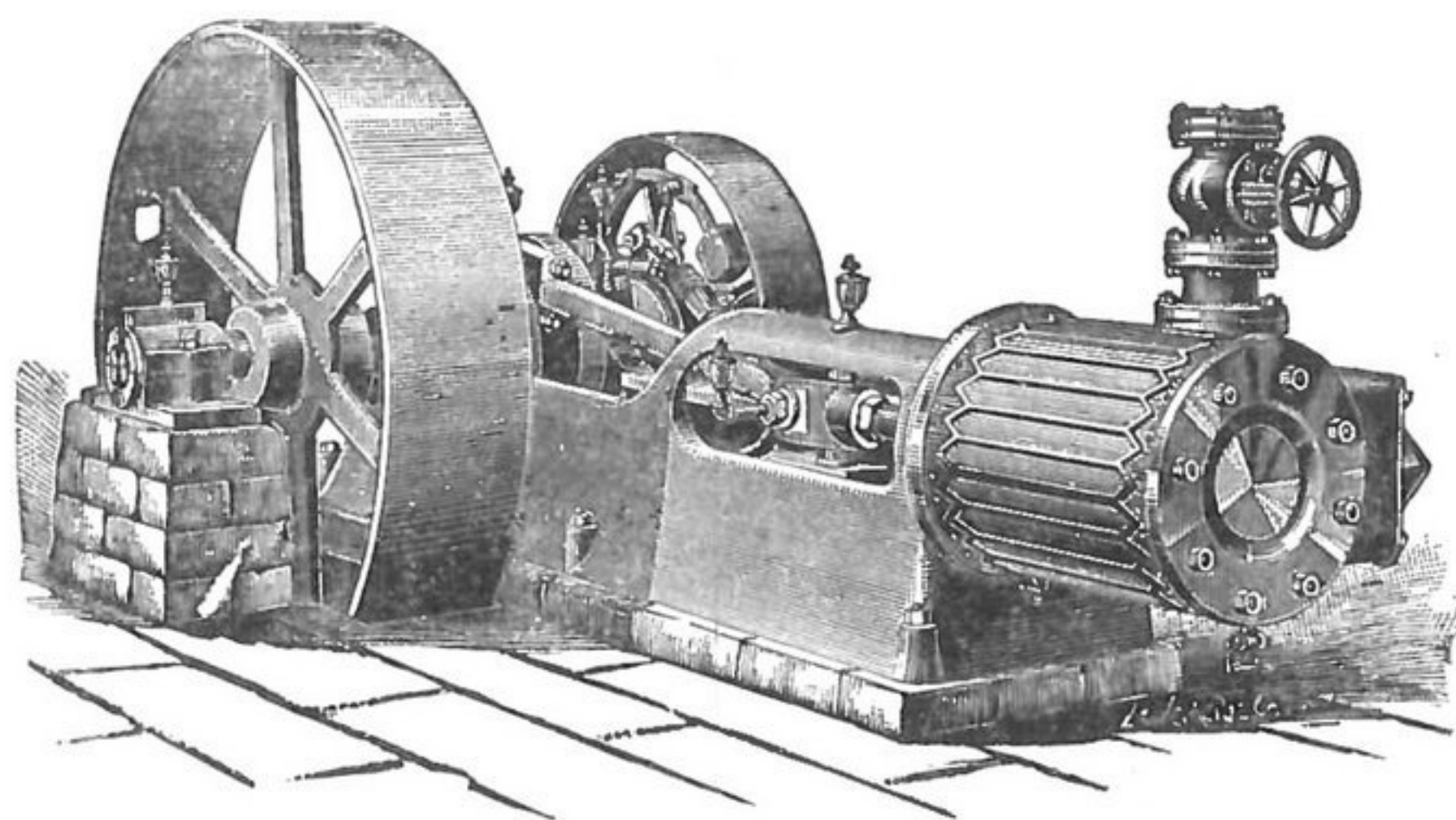
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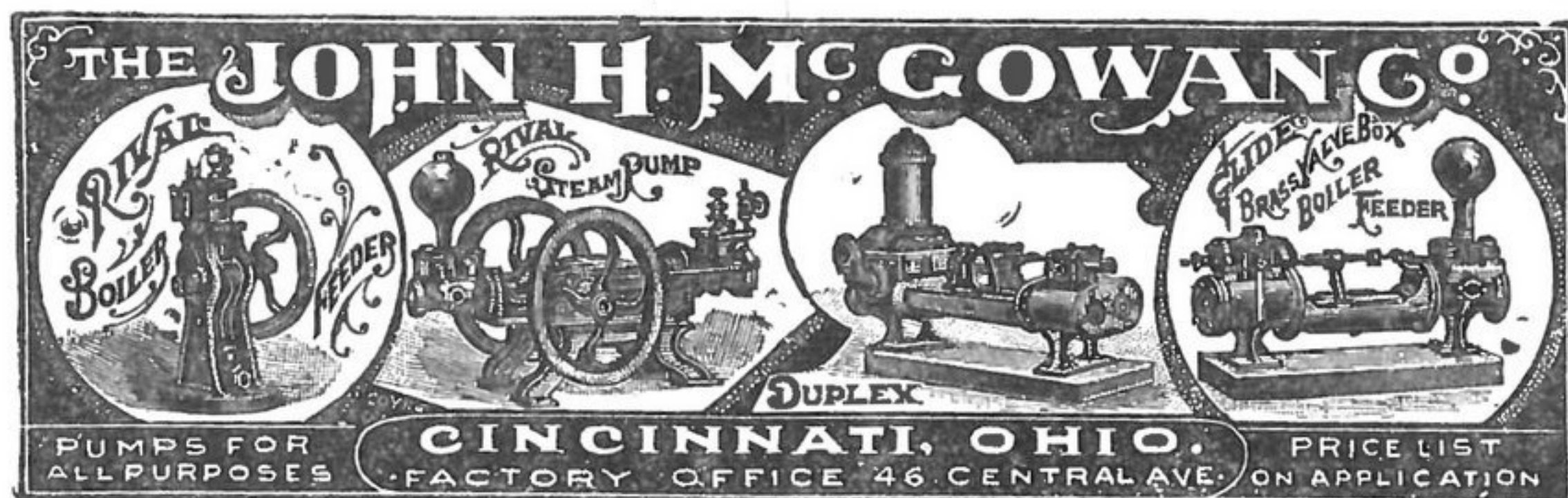
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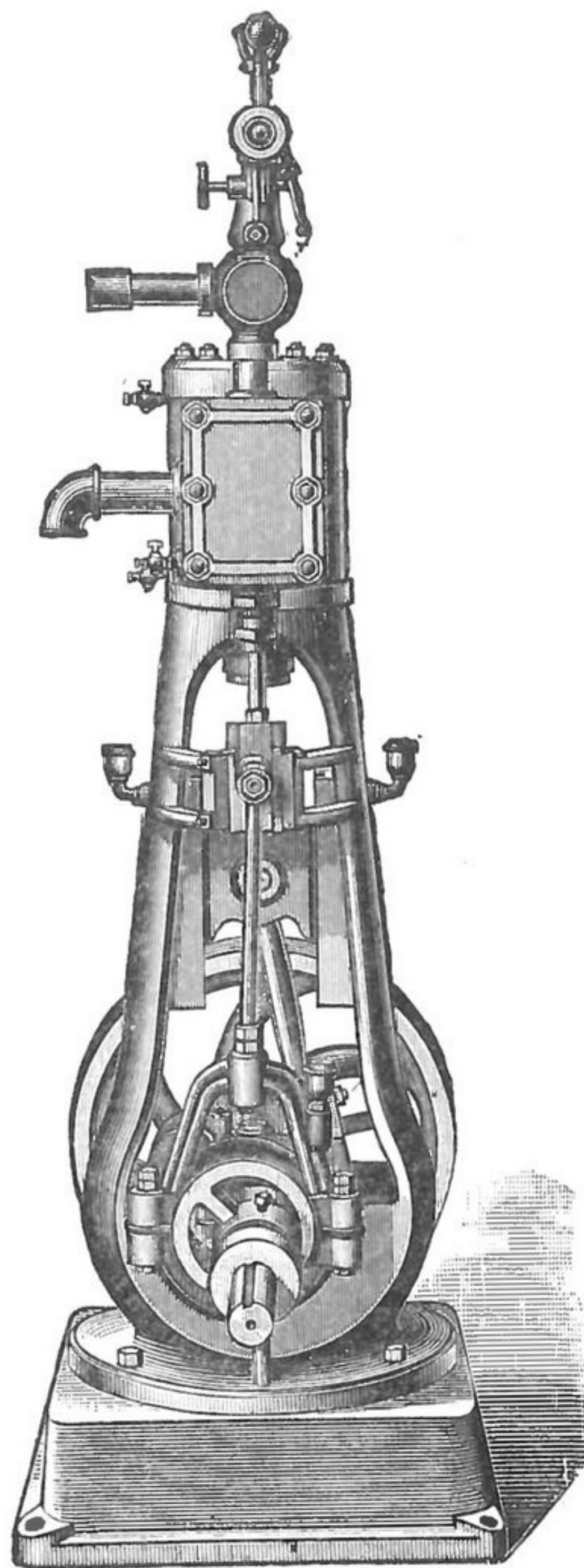
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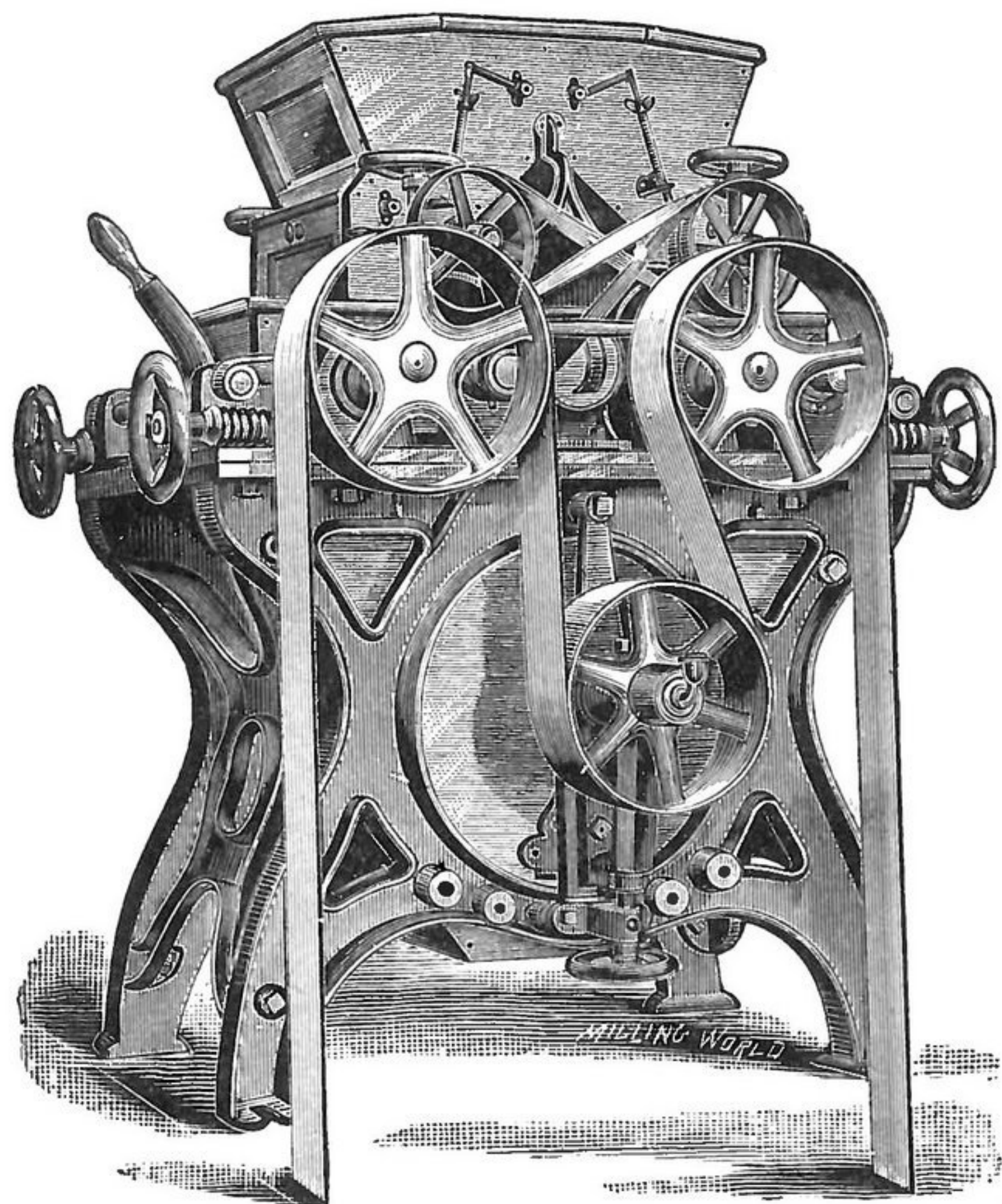
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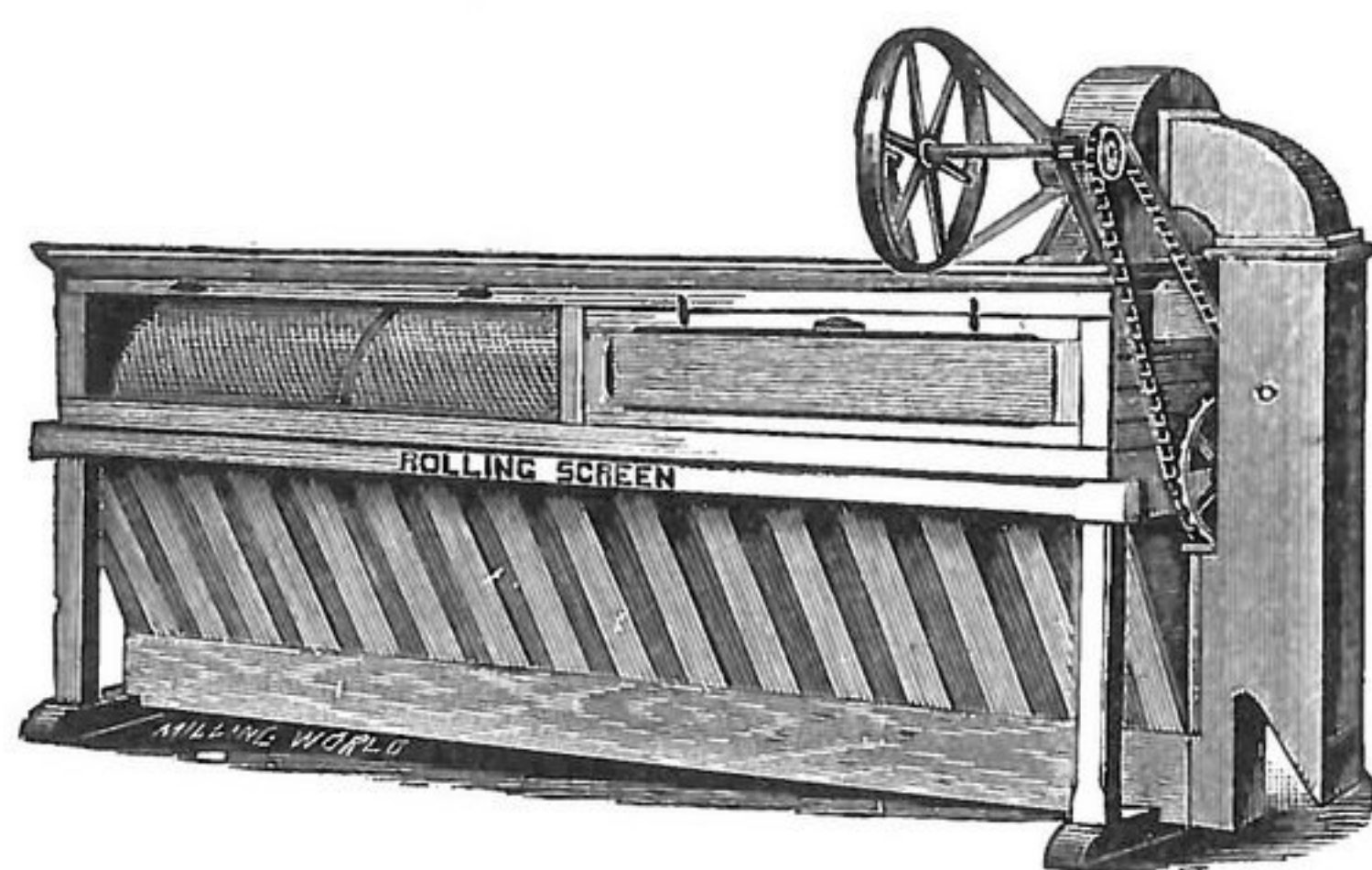
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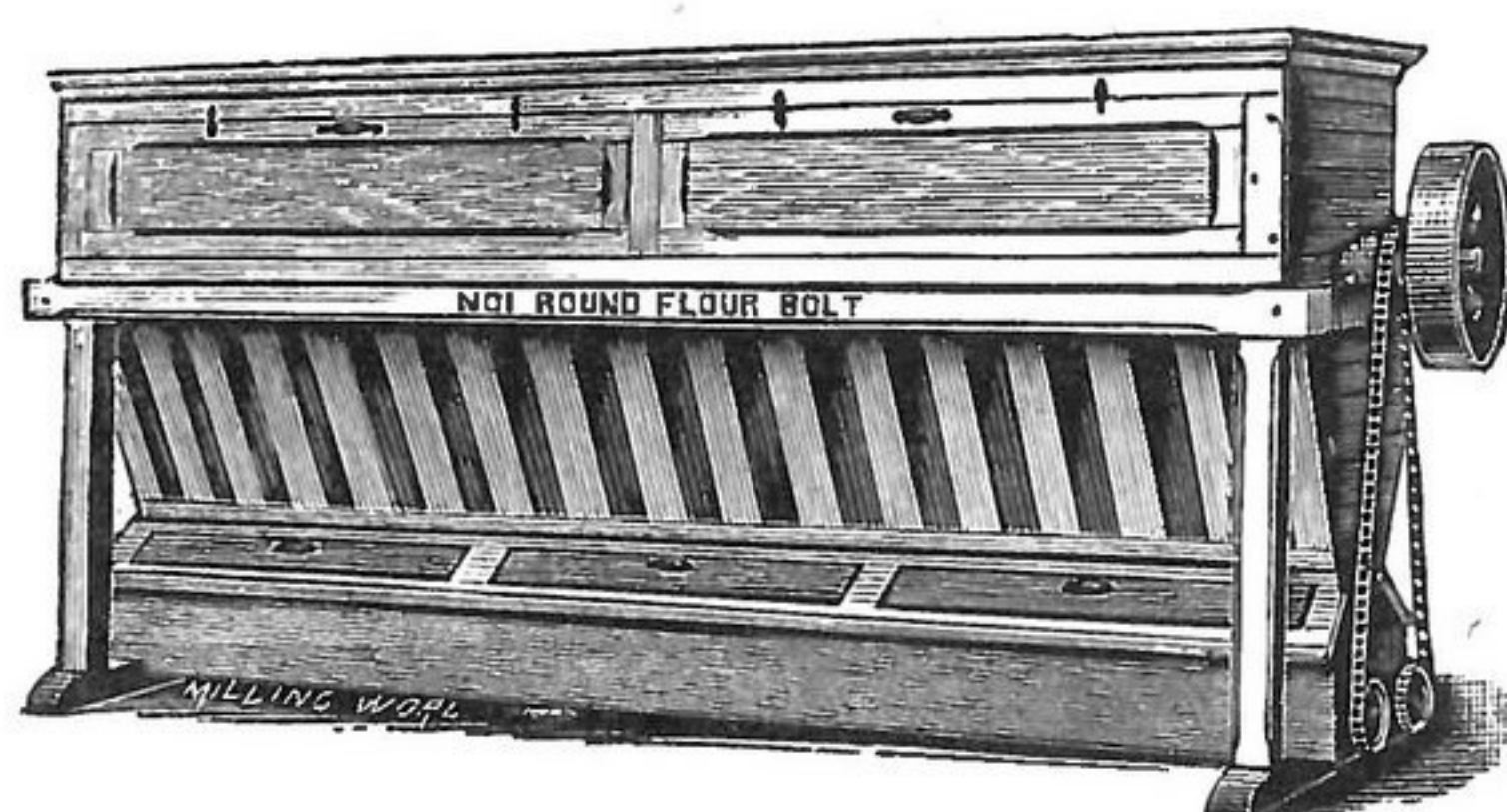
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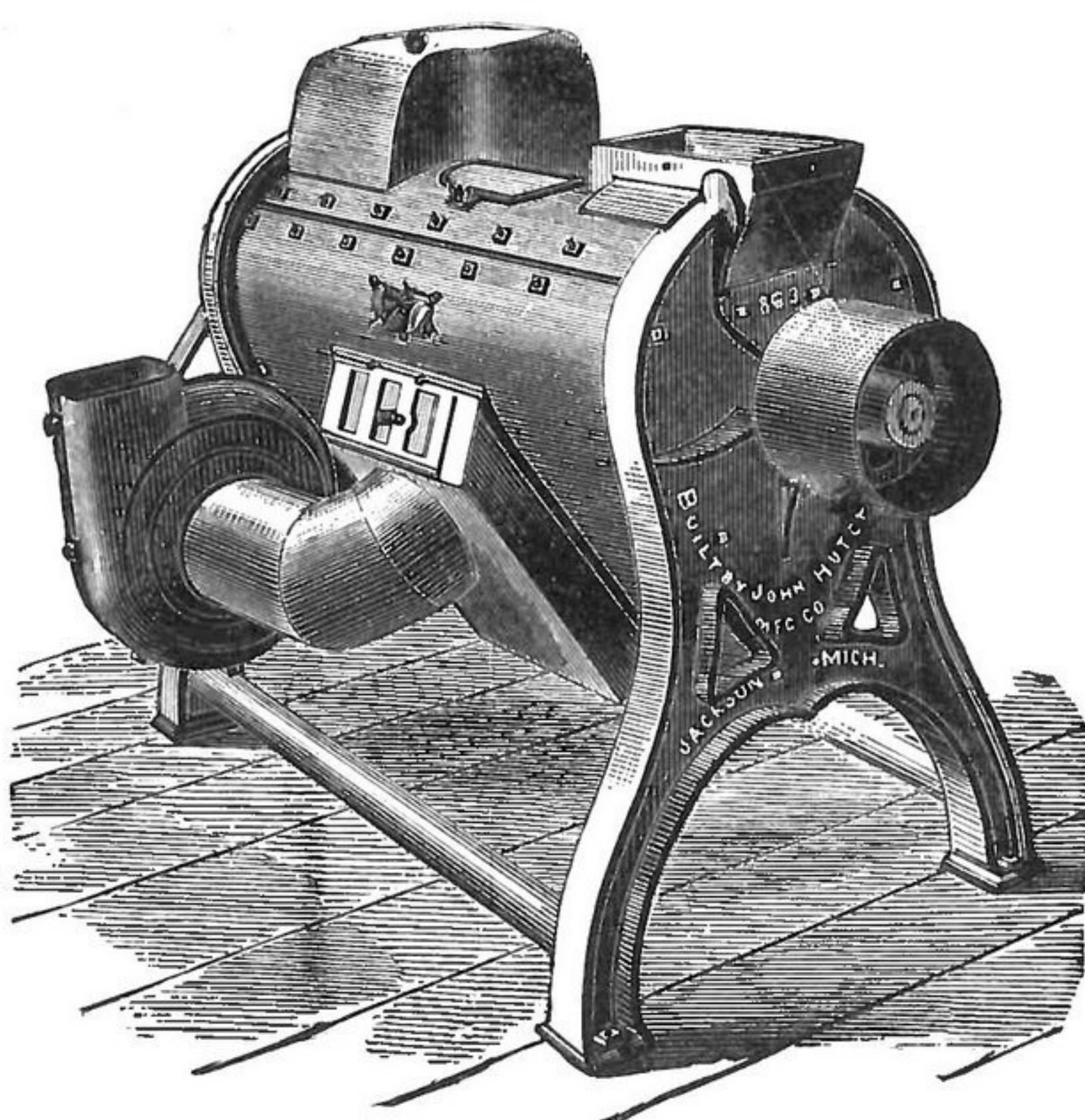


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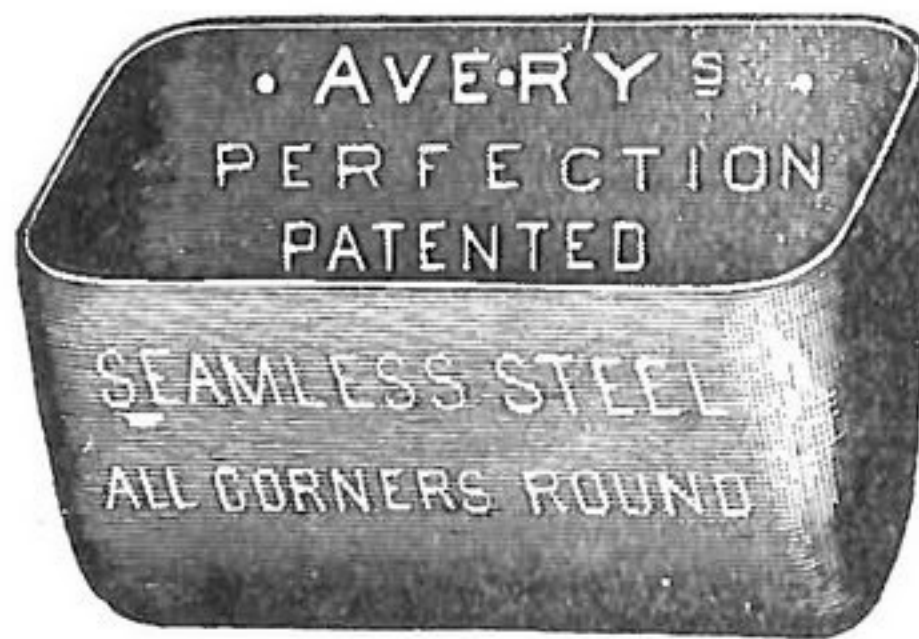
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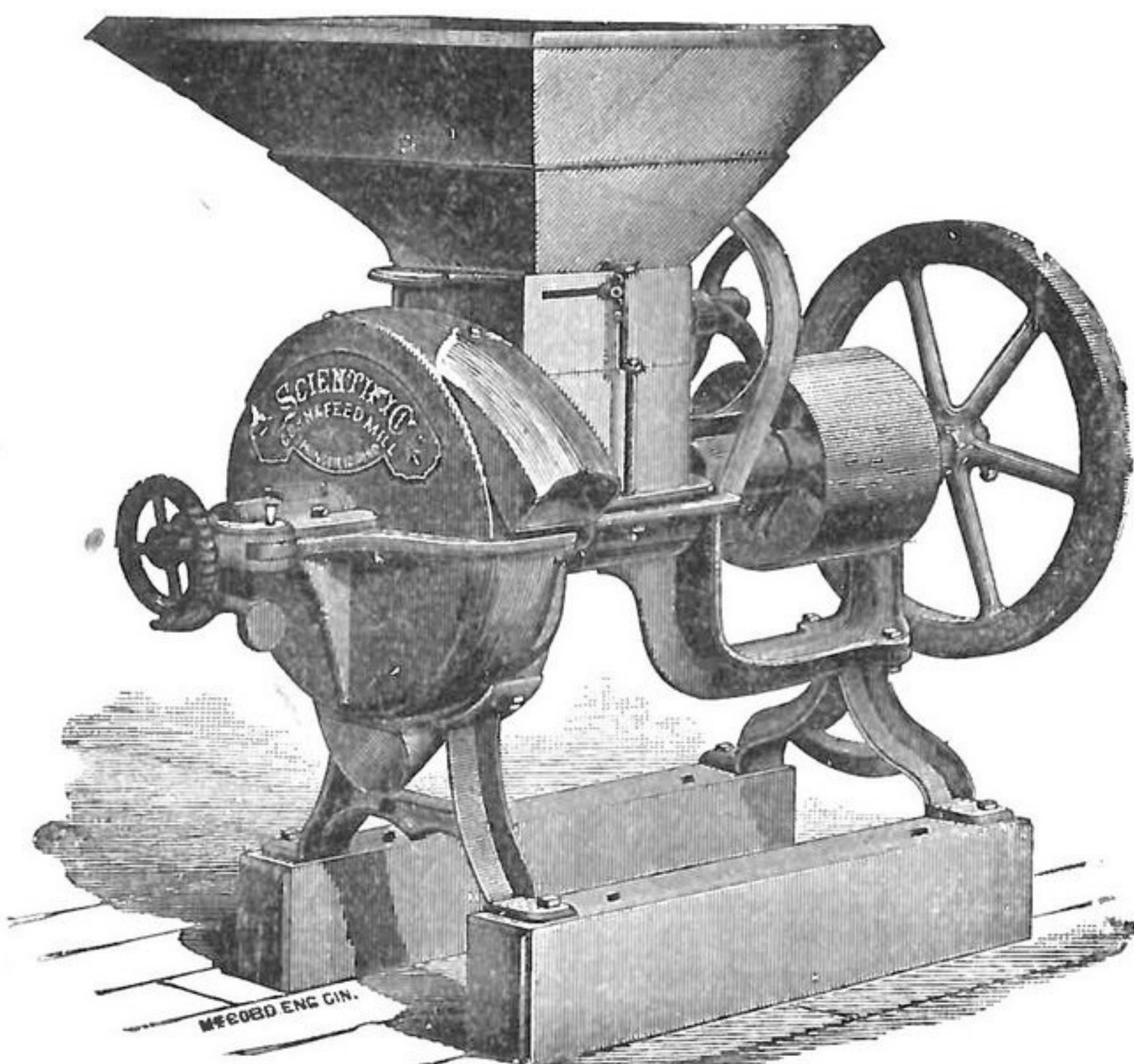
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